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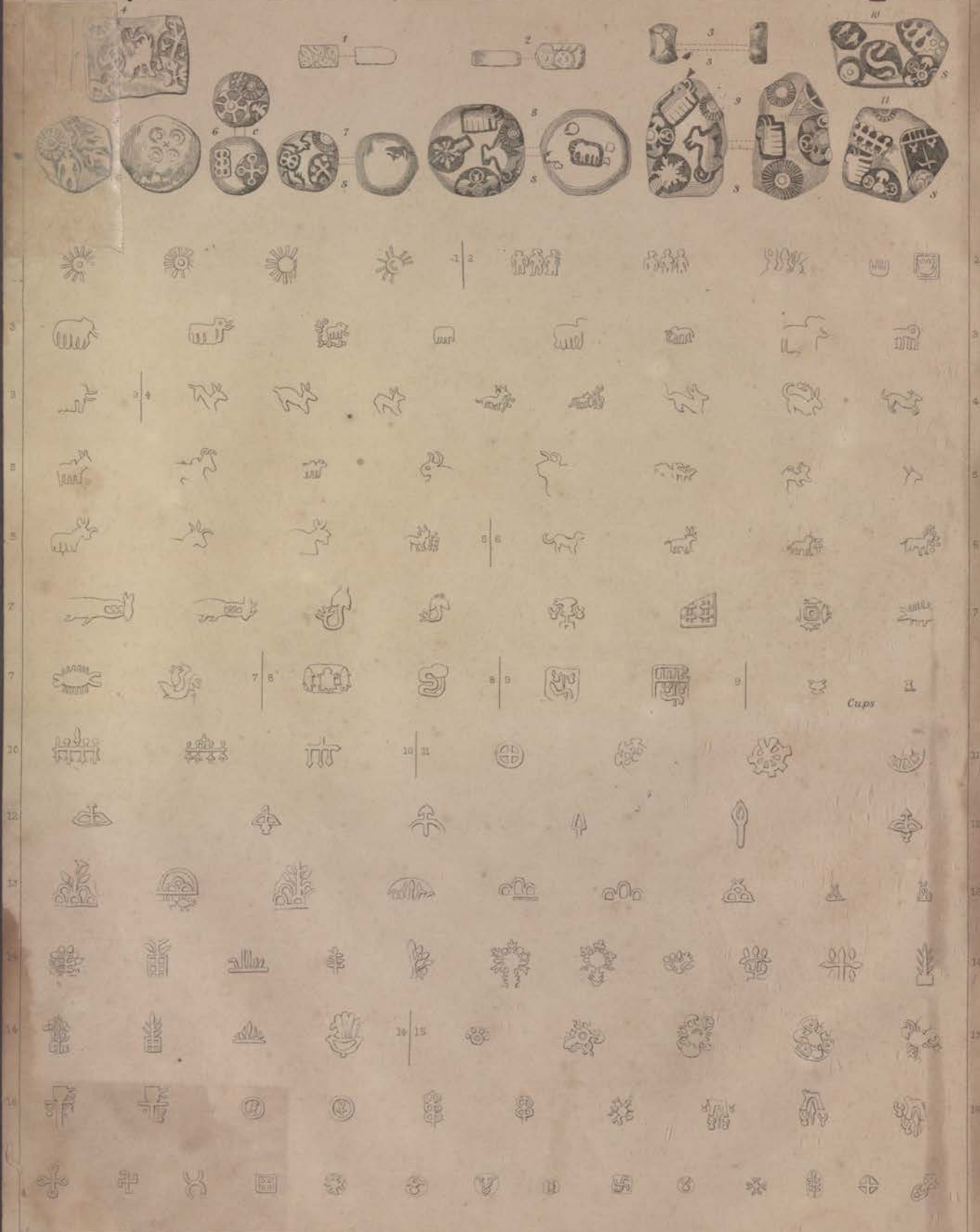
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**THE
ASIATIC SOCIETY OF BOMBAY**

Town Hall, Bombay.



SYMBOLS MARKED ON THE EARLY INDIAN COINS.

M A R S D E N ' S

NUMISMATA ORIENTALIA.

A NEW EDITION

SUPPORTED IN THE PRELIMINARY ARTICLES BY THE FOLLOWING CONTRIBUTORS:

DR. H. BLOCHMANN. GENERAL A. CUNNINGHAM. MR. RHYS DAVIDS. DON PASCHAL DE GAYANGOS.
PROFESSOR GREGORIEF. SIR WALTER ELLIOT. SIR ARTHUR PHAYRE. MR. STANLEY L. POOLE.
MR. E. T. ROGERS. M. F. DE SAULCY. M. H. SAUVAIRE. MR. EDWARD THOMAS.

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PART I.

A N C I E N T I N D I A N W E I G H T S .

BY

EDWARD THOMAS, F.R.S.,

LATE OF THE EAST INDIA COMPANY'S BENGAL CIVIL SERVICE,
CORRESPONDANT DE L'INSTITUT DE FRANCE; CORRESPONDING MEMBER OF THE GERMAN ORIENTAL SOCIETY;
MEMBER OF THE ROYAL ASIATIC SOCIETY; HONORARY MEMBER OF THE ASIATIC SOCIETY OF BENGAL;
MEMBRE DE LA SOCIÉTÉ ASIATIQUE DE PARIS; AND MEMBER OF THE
NUMISMATIC SOCIETY OF LONDON.

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P R E F A C E.

HAVING suggested to Messrs. Trübner & Co. the desirability of the issue of a new edition of "MARSDEN'S NUMISMATA ORIENTALIA" on an enlarged scale and on a basis calculated to secure the co-operation of representative numismatists of all nations, I felt myself bound to draft the general plan of the work, and to invite my coadjutors to a consideration of a common method of transliterating Oriental words, and a possible compromise among ourselves towards that important end.

I did not propose that my name should be prominently identified with the undertaking, desiring to leave the various sections of the publication to more able or younger men, and taking only so much share in it as to appear as one of the staff of contributors, answerable merely for my individual writings. As the prospects of the work have matured beyond all expectation, I have found it necessary to assume a more direct part in distributing the divisional subjects among the tried authors who have consented to join our ranks, and, in a subdued tone, in exacting conformity to a fixed method of treatment in the execution of the work at large.

Several papers were already in an advanced state of preparation, and in one case the illustrations were even printed off, when the urgency of the Publishers induced me to come to the front with the article now submitted. It has the advantage of appropriately opening a Book on Coins, inasmuch as it begins at the very beginning of the art of coining, otherwise I should not have cared to reproduce an Essay, partly published some years ago, without a much more searching and complete

reconstruction than time has permitted in the present instance. With this reservation, I have sought to make the article as comprehensive as possible in itself, and seeing that this edition may go forth into foreign lands, where access to the English and other works cited in its pages may be difficult, if not impossible, I have further endeavoured, under the saving shadow of the small Note-type, to substitute explanatory quotations for the bare references it is usual to supply.

E. T.

LONDON, *August*, 1874.

GENERAL PLAN OF THE WORK.

THE guiding scheme of the literary portion of the undertaking pre-supposes the complete independence of each signatory Editor, whose article or separate section of the combined work will constitute a detached *brochure*, or publication in itself—paged without reference to the larger Encyclopædia, the final limits of which it may be difficult to foretell; the ultimate incorporation of the separate Essays being determined by priority of date of the dynasty treated of,—while ample introductory heads of chapters and copious indices will secure all eventual facility of reference.

The general plan for the conduct of the work submitted to the different contributors contemplates—

A.—A brief but comprehensive outline of the history of the dynasty whose coins form the subject of review; or preferably, in some cases, detached notices for each reign.

B.—A leading and critical list of the regal succession, supplemented by a serial recognition of the contributions of all modern writers on the subject.

C.—A subordinate notice regarding the original intrinsic and exchangeable values of the current coin.

D.—A full and exhaustive numismatic list of the coins in due order; the text-notes or comments on individual pieces being restricted to marked peculiarities, which should only be enlarged upon in instances of historic importance. On the other hand, kindred illustrations from Palæographic or contemporary inscriptions, architectural or sigillary monuments, will materially aid the higher objects of the publication.

E.—A concluding *résumé* of the normal sites, the varying designations and fortunes of the mint cities, with a map and general geographical index of the towns and the dates developed on the dynastic coinage.

The following are the names of the contributors and the several subjects undertaken up to this time :—

Coins of Southern India	SIR WALTER ELLIOT, Scotland.
—— Arakan and Pegu	SIR ARTHUR PHAYRE, Ireland.
—— Ceylon	MR. RHYŶ DAVIDS, late Ceylon C.S.
—— the Indo-Scythians	GENERAL A. CUNNINGHAM, India.
—— the Bengal Sultáns	DR. H. BLOCHMANN, Calcutta.
—— the early Arabico-Byzantine adaptations	M. F. DE SAULCY, Paris.
—— the Russo-Tátár Dynasties	PROFESSOR GREGORIEF, St. Petersburg.
—— the Khalifs of Spain, &c.	DON PASCHAL DE GAYANGOS, Madrid.
—— the Fatimites of Egypt	M. H. SAUVAIRE, Cairo.
—— the Túlún Dynasty of Egypt	MR. E. T. ROGERS, Cairo.
—— the Seljúks, Ortókites, and Atábegs	MR. STANLEY L. POOLE, England.
—— the Sassanians of Persia.	MR. EDWARD THOMAS, London.

THE TRANSLITERATION OF ORIENTAL WORDS.

THE first responsibility the Editor of the new issue of Marsden's *Numismata Orientalia* has to encounter is the endeavour to obtain the adhesion of the various international contributors to a fixed and uniform system of transliteration of Oriental words.

Were the task limited to reconciling the different schools of the Arabic language, it would be sufficiently formidable at this moment, when each representative of a sectional adaptation of that speech claims dominance for his own method. But, in the present instance, we have to satisfy the requirements of numerous varieties of Aryan and Túránian speech, and to determine how far we are to admit the reconstructed Semitic alphabet to take rank over its elder brethren.

Considering the very late date of the elaboration of Arabic grammar, and the confessed adaptation of its alphabet from previously current systems of writing, we must clearly recognize the higher claims of the more Eastern nationalities, who did not mould their vocal organs on such mixed and discordant sounds, and who are so much more largely represented, both in spread and numbers, in the work now in course of publication.

It is a singular but suggestive fact that we hear of few difficulties in the way of the transliteration of the archaic languages, Egyptian, Assyrian, Phœnician, or Hebrew on the one part, or of the Túránian and Aryan writings on the other. For the due definition or reproduction of the Sanskrit alphabet, as developed from the Indian models on the Monoliths of Aśoka (B.C. 250), the learned world are sufficiently in accord in the acceptance of Sir W. Jones's system. The contest commences when we have to submit Aryan and Túránian languages to the test of the, for them, needlessly amplified scheme of Arabic writing. The central type by which the question has to be tried for the purposes of this work is the *Aryan* Persian, already full of Aramaisms, but retaining much of its archaic simplicity of grammar,¹ and which ultimately spread as the official language of the Ghaznavís and their successors, the occupying Pathán and Mughal rulers of India, and formed the basis of the modern *Urdú* or camp *lingua franca* of Hindústán, the now vernacular *Hindústání*. Seeing, then, how much of the orthography and attendant pronunciation of the language of the majority of our coin series are dependent upon the Persian basis, the Editor recommends to his coadjutors, in accordance with the genius of that language, the simplest form of transliteration possible for the consonants, while admitting a more extended range of option in the vowels, to meet the varieties of speech from time to time embodied in the adapted Persian alphabet.

The subjoined Table of Alphabets will show at a glance the different systems of transliteration advocated by the various linguistic authorities of our day, together with a final column of the scheme proposed for use in the present work. This has been framed upon the groundwork of the system adopted by Mr. Francis Johnson, in his *Persian Dictionary*, the latest and most enduring effort of our country towards the critical definition of a language once of the highest importance to us in our capacity as rulers of India.

In order to conciliate, and in so far satisfy the reasonable demands of the contributors, who undertake the purely Arabic sections of the work, a tentative scheme of diacritical marks for consonants has been devised; though in the parallel association with the words and names in the *original* character, which will appear in full, the discriminative signs in the *English* text scarcely seem to be needed. A further provision has been made against any confusion of letters like ش *sh* and ه *h*, etc., by the admission of a break between the English letters in the latter case. For the more simple Persian and other languages, the Editor would suggest the rejection of all but really essential diacritical marks.

¹ Mirzá Ibrahim, once Persian Professor at the College of Haileybury, in speaking of the simplicity of his own tongue, remarks:

"The beginner cannot fail to observe, that many of the letters, as they are set down in the order of the alphabet, have the same sounds, as

ث س ص ز ض ظ ت ط ع ا ح ه

which have been marked s, z, t, a, and h; and he may naturally wonder at this redundancy. In fact there is no actual redundancy. Eight of these letters

ق ع ظ ط ض ص ح ث

are peculiar to the Arabic, and are sounded in that language very differently from what they are in Persian. They have generally sounds very harsh and rough; some very difficult, and others almost impossible for an English beginner to imitate. Let him be consoled, however, with the assurance, that an exact imitation of these sounds is not only unnecessary, but absolutely useless to a reader of the Persian language; inasmuch as the Persians themselves never attempt to pronounce them as the Arabs (do, but) pronounce them merely like those Persian letters which come the nearest to them in point of sound, exactly as I have set them down in the order of the alphabet."—*Persian Grammar*. London, 1841. p. 4.

The Sanskrit Alphabet, with the corresponding Roman equivalents, after the system of Sir W. Jones.

Gutturals	क k,	ख kh,	ग g,	घ gh,	ङ ṅ.	अ a,	आ á.
Palatals	च ch,	छ chh,	ज j,	झ jh,	ञ ñ.	इ i,	ई í.
Cerebrals	ट t,	ठ ṭh,	ड ḍ,	ढ ḍh,	ण ṇ.	उ u,	ऊ ú.
Dentals	त t,	थ th,	द ḍ,	ध dh,	न n.	ऋ ṛi,	ॠ ṛí.
Labials	प p,	फ ph,	ब b,	भ bh,	म m.	ल ḷi,	ॡ ḷí.
Semivowels . . .	य y,	र r,	ल l,	व v,		ए e,	ऐ ai.
Sibilants and Aspirate	श s,	ष sh,	स ś,	ह h.		ओ o,	औ au.
						अं aṅ,	अः aḥ.

Sanskrit vowels.

Persian and Arabic Alphabets.

1	2	3	4	5	6	7		1	2	3	4	5	6	7	
Sir W. Jones.	Mirza Ibrahim	F. Johnson.	M. A. Chodzko.	Dr. Wright.	Dr. Fuerst.	Mr. Lane.	Proposed Scheme.	Sir W. Jones.	Mirza Ibrahim	F. Johnson.	M. A. Chodzko.	Dr. Wright.	Dr. Fuerst.	Mr. Lane.	Proposed Scheme.
a	a	a	a	a	z	a	a	é	a	é	'a	'a	z	'a	'
b	b	b	b	b	b	b	b	gh	gh	gh	gh	g.	g.	gh	gh
p	p	p	p	—	—	—	p	f	f	f	f	f	f	f	f
t	t	t	t	t	t	t	t	k	ek	k	q	k	k	k	k
th or s	s	s	s	t	t, θ	th	s	k	k	k	k	k	k	k	k
j	j	j	dj	g	g	j	j	g	g	g	g	—	—	—	g
ch	ch	ch	tch	—	—	—	ch	l	l	l	l	l	l	l	l
h	h	h	hh	h	h, ɸ	h	h	m	m	m	m	m	m	m	m
kh	kh	kh	kh	h	h	kh	kh	n	n	n	n	n	n	n	n
d	d	d	d	d	d	d	d	v, w	v	v, w	v, ou	w	v, w, û	w	v, w
z	z	z	z	d	d	dh	z	h	h	h	h, é	h	h	h	h
r	r	r	r	r	r	r	r	y	y	y	y, î	y	y, i	y	y, i, e
z	z	z	z	z	z	z	z	a	ă	a	e	a or è	a or e	a or e	a, ă
j	j	j	j	—	—	—	zh	i	ě	i	i	i	i or y	i	i, e
s	s	s	s	s	s	s	s	u	û	u	u	u or ö	o or u	u or o	u
sh	sh	sh	ch	s	s	sh	sh	ā	—	ā	â	ā	—	á	á
s	s	s	s	s	s, ʒ	s	s	ï or e	—	î	—	î	—	ee	í, é
z	z	z	z	d	d	d	z	û or o	—	û	ô or ou	û	—	oo	ú,
t	t	t	t	t	t	t	t	au or	—	au	ô ou	—	—	ow, ó	au, ó
z	z	z	z	z	z	dh	z	aw	—	ay	—	—	—	ey, ei	ay, ai
z	z	z	z	z	z	dh	z	ai	—	ay	—	—	—	ey, ei	ay, ai

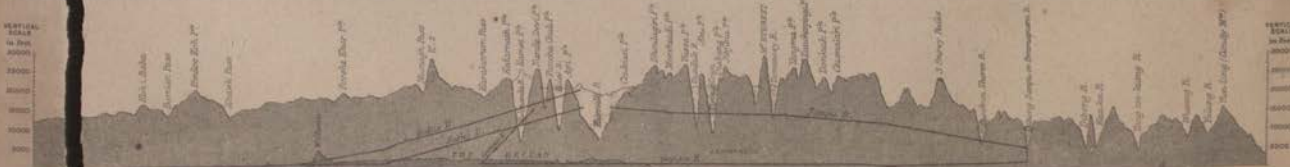
- No. 1.—Persian Grammar. London, 1828.
No. 2.—" " London, 1841
No. 3.—Persian Dictionary. London, 1852.
No. 4.—Grammaire Persane. Paris, 1852.

- No. 5.—Arabic Grammar. London, 1859.
No. 6.—Hebrew and Chaldee Lexicon. London, 1867.
No. 7.—Arabic Lexicon. London, 1863-72.

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The Map of India which accompanies this article has been reduced by photography from the standard copper-plate Map of the East India Government, which constitutes the matrix of the various transfer lithographic illustrations which appear from time to time in the Indian Blue Books. I have to express my acknowledgments for the permission to use the reproduction, and to thank Messrs. Markham and Saunders for the adaptation of the outline chart to the definition of *the India of Manu*.



1. Through the peaks and valleys of the Himalayan Mountains. 2. Along the river Ganges, Indus, and Brahmaputra, defining the northern base and the southern base of the Mountain Range. 3. Across the Deccan in latitude 18° N.

NUMISMATA ORIENTALIA.

ANCIENT INDIAN WEIGHTS.

ONE of the latest authorities on International Metrologies, Don V. Queipo,¹ abandoning the wise reserve of Boeckh, has undertaken the task of tracing the derivation of the Indian system of weights and measures to primary Egyptian sources.² I am quite prepared to recognize Egypt's antecedent and more immediate influence on the civilization of the ancient world, and to admit, in advance, that, by a curious coincidence, her copper standard of 1200 B.C. is closely identical with one of India's earlier current weights,—a fact, be it said, hitherto unrecognized.³ But, on the other hand, we must demand much more complete and searching evidence of borrowing or imitation to establish the leading proposition so confidently advanced by M. Queipo,—some such scale of proof, indeed, as that already sketched out by Boeckh himself in the following terms:—

“In cases where the weights and measures of two different nations are found to be in a precise and definite

¹ Essai sur les Systèmes Métriques et Monétaires des Anciens Peuples, par Don V. Queipo, 3 vols. 8vo. Paris, 1859.

² “Il n'en est pas de même des Indiens; ceux-ci sont certainement très-anciens; le bouddhisme est antérieur de six siècles à l'ère chrétienne; le brahmanisme est antérieur au bouddhisme, et les Védas atteignent les temps où, pour la race indienne, du moins, l'histoire commençait à peine. Il est donc curieux de voir si cette civilisation reculée, qui a su trouver tant de choses a su aussi trouver par elle-même une métrologie, ou si elle a reçu ses poids et mesures de peuples encore plus vieux qu'elle. La coudée indienne, *hasta*, est composée de deux empanes (*vitasti*), et chaque empan de 12 doigts (*angula*); c'est la division égyptienne. La *hasta* est évaluée à 18 pouces anglais ou 457 millimètres; c'est la coudée naturelle d'Égypte qui est de 450, ou, si l'on veut, la coudée olympique qui est de 462. Maintenant, comment les Indiens formeront-ils leurs mesures de capacité? Cuberont-ils une partie cette *hasta* qu'ils ont fait leur? Non, ils ont une *cumbha* qui est de 164 litres, et qui répond au cube de la coudée haschemite ou assyrienne (640 millimètres); c'est, du moins, ce que M. Queipo détermine par des calculs judicieusement conduits. Si l'on se tourne d'un autre côté, et que l'on recherche l'unité de poids chez les Indiens, on trouve la *tank-sala*, qui est de 3 gr. 50, c'est-à-dire la drachme des Lagides, qui est elle-même un poids d'origine égyptienne.”—Article by M. Littré, Jour. des Sav., April,

1861, p. 233. The reviewer continues:—“En 1834, profitant de ces trouvailles (sur la coudée égyptienne, etc.) un habile géomètre, M. Saigey, publia un ouvrage sur la métrologie ancienne, qui présenta les choses sous un nouveau jour. Dès ce moment, on peut le dire, surtout après les travaux de M. Queipo, la théorie générale en fut trouvée. Cette théorie repose sur deux faits fondamentaux, à savoir que toutes les mesures, tous les poids et toutes les monnaies, sont reliés par des relations mathématiques dans le système primordial, qui a son siège dans l'Égypte, l'Assyrie, la Phénicie, et que les systèmes de la Grèce, de l'Italie, de l'Arabie, de l'Inde, et de la Chine, en sont des dérivés.” I may remark that the टंकशाला *tankaśāla*, تنكسال above relied on means a *mint* for the production of coin, not a *coin* in its independent sense. The word *tanka* or *tanga* is stated by Erskine (History of India, i. 546) to have been of Chagatai Túrki origin, derived from *tang*, “white,” टङ्क borax, etc. See also A. Vámbéry, *denge*, “monnaie d'argent” (Jagatai Dictionary), and the Russian *denge*; but, on the other hand, Aryan etymologists, with less reason, claim the word as their own under तनु, تنگ, *tenuis*, etc.

³ This approximation of weights was first noticed in my Pathán Kings of Dehli (London, 1871), p. 362.

ratio one to the other—either exactly equal, or exact multiples and parts of each other—we may fairly presume, either that the one has borrowed from the other, or that each has borrowed from some common source. Where the ratio is inaccurate or simply approximative, it is to be treated as accidental and undesigned.”—George Grote, *Minor Works*, p. 138, Review of Boeckh’s “*Metrologische*,” etc. (Berlin, 1838).

It will be discovered in the following pages how far these conditions are fulfilled by the records of Indian monetary progress, traditional or material. Had M. Queipo confined the claims of the West to having influenced the literature and learning of the East at a later period, I should have been too ready to support him, as it can be proved to demonstration that the Brahmanical writers in after-times borrowed Greek science, and even appropriated the tenets of our Greek Testament, not only without acknowledgment, but with studious disguise and pretended *Indian* authority.¹ The origination of the Indian system of weights, in *India*, however, seems to admit of no question, the fundamental principles of which were probably framed *in situ* before the Vedic Aryans moved from the banks of the Oxus, and long before the Western branch of the Aryan family took their first lesson in Hellenic idolatry.² That the Indian system should disclose fragmentary points of relationship to the Egyptian, and more decided associations with the less remote Accad civilization of the Euphrates valley, was only to be expected,—the three nationalities were all members of the great Túránian family who once seem jointly to have occupied the southern limits of the supposedly habitable earth.³ But the intrusion of new nationalities on the Tigris severed whatever of ethnic continuity may have previously existed, and left India to work out her own future, undisturbed by ties of race or foreign intervention,—so that very many centuries afterwards, when the Greeks penetrated into the land, they felt and acknowledged a purely independent national development,

¹ See *infra*, p. 27.

² *Scythism and Hellenism*.—“The parents of all the heresies . . . are these four primary ones :

“The first is Barbarism (*Βαρβαρισμός*, Patriarchism?), which prevailed without a rival from the days of Adam through ten generations to the time of Noah. . . .

“The second is Scythism (*Σκυθισμός*), which prevailed from the days of Noah, and thence downwards to the building of the Tower and Babylon. . . .

“The third is Hellenism (*Ἑλληνισμός* Ionism), which originated in the days of Seruch with the introduction of idolatry: and as man had hitherto followed each some demonolatrous superstition of his own, they were now reduced to a more established form of polity and to the rites and ceremonies of idols, and the followers of this began with the use of painting, making likenesses of those whom they had formerly honoured, either kings or chiefs. . . . The Egyptians, and Babylonians, and Phrygians, and Phœnicians were the first propagators of this superstition of making images and of the mysteries; from whom it was transferred to the Greeks from the time of Cæcrops downwards. But it was not till afterwards, and at a considerable interval, that Cronos and Rhea, Zeus and Apollo, and the rest, were esteemed and honoured as gods.”—Epiphanius, quoted in Cory’s “*Ancient Fragments*” (London, 1832), p. 53.

³ There are many curious traces of this ancient connexion, material and traditional. Strabo, xv. i. 25, quoting Nearchus, says, “When Alexander saw crocodiles in the Hydaspes, and

Egyptian beans (*Nymphaea Nelumbo*) in the Acesines, he thought he had discovered the sources of the Nile.”

“In manner, language, and many other respects, Egypt was certainly more Asiatic than African; and though there is no appearance of the Hindú and Egyptian religions having been borrowed from one another, . . . yet it is not improbable that those two nations may have proceeded from the same stock, and have migrated southwards from their parent country in Central Asia.”—G. Wilkinson, “*Ancient Egyptians*,” i. 3. See also his articles in Rawlinson’s *Herodotus*, ii. 29, note 9, and Appendix, p. 279.

See also Herodotus, iv. 44, vii. 69, 70; Strabo, i. ii. 25, 26, xv. i. § 4, 13, 19, 25; Arrian, *Indica*, vi. “The Northern Indians bear a greater resemblance in form and feature to the Egyptians;” vii. “The Indians were anciently like the Scythians, a wandering race of mortals who tilled no lands;” G. Syncellus, 151, c. *Αἰθίοπες ἀπὸ Ἰνδοῦ ποταμοῦ ἀναστάντες πρὸς τῇ Αἰγύπτῳ ἔκησαν*, “The Ethiopians came from the Indus and settled in Egypt;” Eusebius, *Chron. Can.* ii. 278; Pliny, vi. 22, 26; Justin, ii. 1; Am. Marc. xxii. 15; Caldwell, *Dravidian Grammar*, 66, note. See also the ethnological Scythic connexion treated at p. 23, “The Brahui, the language of the Belúchi mountaineers in the Khánsip of Kelat, enables us to trace the Dravidian race beyond the Indus to the southern confines of Central Asia;” and pp. 38, 42-3-5, 69, 71, etc.; and for the Australian continental question, p. 52; Prinsep’s *Essays*, vol. ii. p. 50.

altogether removed from the characteristics of the other Oriental nations with whom they had come in contact.¹

As regards the near approximation of a single Indian weight to the *kat* or *unit* of the Egyptians, this point will form the subject of further illustration. In the meanwhile, we may freely recognize the possibility of an accepted commercial weight, in these primitive days of traffic and barter, passing mechanically from nation to nation; and though divided by distance and other obstructions, there were many intermediary carriers who may have transported the given weight or its near counterparts from Egypt to India. Whether this result was due to the wholesale deportation of races so prevalent in Euphrates politics,² or brought about by the ordinary commercial intercourse on the lines of the Oxus and the Hindú Kush, or more directly through the deserts of Southern Persia and the coast of Mekrán, we need not stop to inquire.

Having so far outlined the case of the competing claims of two dissevered nationalities to priority in the adoption of an unimportant item in the Metric Scale, we come to the much more pertinent inquiry involved in the closer and more abiding relations established between the old and the new lords of India's soil, and have to endeavour to distinguish the traces of the later contributions and innovations of the northern Aryans from the home developments of the aborigines, or the secondary advances of the earlier occupying races. The Vedic Aryans, as will be seen hereafter, during their passage in tribal sections through the gorges and valleys of the Hindú Kush, carried down with them a type of Phœnician writing, in a very advanced stage of adaptation towards the higher aims and more exact expression of the Sanskrit language; and with these assimilated characters, as shown by their subsequent co-ordination, a method of numeration distinctly based upon Phœnico-Egyptian ideals: while the indigenous Indians of a closely subsequent epoch are found to employ an independent scheme of figures, in appropriate unison with the outlines of their own local alphabet. These and other international questions will have to be examined more at large in future pages; but thus much of preliminary notice is necessary, as it may be very difficult to discriminate and separate these conflicting influences as they present themselves in the ordinary course of the investigation.

¹ "Moreover, India being of the largest extent of all others, by far, is inhabited by many different nations (of whom none are foreigners, but all natural inhabitants): and they say that no strangers ever planted amongst them, nor they themselves ever sent forth any colonies into other countries; and they tell stories that anciently the inhabitants fed only upon herbs and roots that grow in the fields, and clothed themselves with wild beasts' skins, as the Grecians did; and that arts and other things conducing to the well-being of man's life were found out by degrees, necessity pressing upon a creature that was rational and ingenious, and had likewise the further helps and advantages of hands, speech, and quickness of invention to find out ways to relieve himself."—(Megasthenes) Diodorus Siculus, ii. 38. Translation of G. Booth (1814), i. p. 132. So also Strabo, quoting Megasthenes, who "advises persons not to credit the ancient histories of India, for, except the expeditions of Hercules, of Bacchus (?), and the later invasion of Alexander, no

army was ever sent out of their country by the Indians, nor did any foreign enemy ever invade or conquer it. . . . But not one of these persons proceeded as far as India, and Semiramis died before her intended enterprise was undertaken." Strabo, xv. c. i. § 6, Falconer's translation. See also Arrian, *Indica*, x. *et seq.*; Pliny, vi. 21; Mas'audi, *Meadows of Gold*, Paris edit., i. 148.

² Rawlinson's *Ancient Monarchies*, ii. 529, "Under the Assyrian Kings, Chaldeans were transported into Armenia, Jews and Israelites into Assyria and Media, Arabians, Babylonians, Susianians, and Persians into Palestine. The most distant portions of the empire changed inhabitants; and no sooner did a people become troublesome from its patriotism and love of independence, than it was weakened by dispersion, and its spirit subdued by the severance of all its local associations." See also p. 430.

The general subject under review seems to divide itself into four groups.

- I. Weights and their corresponding Measures.
- II. Money, under its historical aspect.
- III. Coins, *proper*, as distinguished from Bullion.
- IV. Weights of the normal Indian Coins tested by their coincidence with the later Mediæval Mint issues of the land.

This division into chapters will necessarily entail a certain amount of repetition in the text, and frequent cross references to the illustrative notes; but, though inconvenient in some respects, it is the only methodic way of placing the whole question fully and clearly before the reader.

CHAPTER I.¹

WEIGHTS AND THEIR CORRESPONDING MEASURES.

THE system of Indian weights, in its local development, though necessarily asserting a minor claim to the consideration of the European world, may well maintain a leading position in the general investigation of national metrologies, on the ground of its rudimentary and independent organization, and the very ancient date at which its definitions were embodied and committed to writing; while to numismatists it offers the exceptional interest of being able to exhibit extant equivalents of the specified weights preserved in the authoritative text of the original code of Hindu law, as professedly expounded by Manu, and incorporated in the *Mánava Dharma Śāstra*. The positive epoch of this work is undetermined; but it confessedly represents, in its precepts,² a state of society considerably anterior to the ultimate date of their collection and final redaction;³ while the body of the compilation is assigned, on speculative⁴ grounds, to something more than 400 B.C.

It is a singular and highly suggestive fact that numismatic testimony should have already taught us to look for the site of the chief seat of ancient civilization in Northern India, to the west-

¹ The heads and partial framework of this article, amounting to about one-quarter of the matter now printed, were originally published in the *Numismatic Chronicle* for 1864. The Asiatic Society of Bengal did me the unaccustomed honour to reprint the article in their *Journal* for 1864-5.

² Treatises on Law long anterior "to Manu are still in existence."—Prof. Aufrecht, *Philological Society's Transactions*, 1873, p. 222.

³ I trust it will not be imagined that I desire to ignore Megasthenes's statement, that the Indians had "no written laws" (*Strabo*, xv. c. i. § 53). This is, indeed, precisely the testimony—seeing the source from whence it was derived—we should expect from what we *now* know of Brahmanical policy (note 3, p. 8). As to the addition, "who are ignorant even of writing," this vague assertion had previously been nullified by the more accurate information of Nearchus (*Strabo*, xv. c. i. § 67), and is further conclusively repudiated by the incidental evidence contained in the remarkable passage in the same work, where it is stated, "At the beginning of the new year all the philosophers repair to the king at the gate, and anything useful which they have committed to *writing*, or observed, tending to improve the productions of the earth, is then publicly declared" (xv. c. i. § 39).

Professor Max Müller, in his work on "*Sanskrit Literature*" (London, 1859), has devoted several pages to the examination of the use of writing in India, in olden time. I concur in his conclusions as to its limited employment among the Vedic Aryans, though I explain this firstly by the imperfect development and unsettled life they led, and secondly by the defective nature of the Bactrian alphabet they apparently relied on; but more especially to the later priestly tendency to discourage un-

authorized readers. But I demur distinctly to any such limitation being applied to the nations of India at large. Buddhism, in its overt acts, implies education among the masses, if in nothing else, in the prominence accorded to doctrinal public inscriptions and practical writing on mile-stones.

⁴ Max Müller says—"The Code of Manu is almost the only work in Sanskrit literature which has as yet not been assailed by those who doubt the antiquity of everything Indian"; though he reduces the date to about 400 B.C., and points out that the Laws of Manu are paraphrases of the *Dharma Sūtras* of the *Mánavas*.—*Sanskrit Literature*, pp. 61, 62, 206; and *Morley's Digest*, p. cxvii.

Prof. H. H. Wilson, though hesitating to admit the high antiquity of the entire bulk of the composition, was fully prepared to assign many passages to a date "at least" as early as 800 B.C.—*Prinsep's Essays*, i. note, p. 222. See also Professor Wilson's translation of the *Rig Veda Sanhitā*, i. p. xlvii.

M. Vivien de St.-Martin places Manu under "la période des *temps héroïques*," *i.e.* between the twelfth and thirteenth centuries B.C. and the Buddhist epoch of B.C. 543.—*Etude sur la Géographie et les Populations primitives de l'Inde*, Paris, 1859. The same writer, in a later paper in the *Révue Germanique* of 1861, p. 80, fixes the first appearance of the Aryans in India at 1600 B.C., the collection of the Vedic writings at 1200 B.C., and Buddha's *Nirvāna* at 543 B.C.

Prof. Cowell, in his edition of *Elphinstone's India* (edit. 1866, p. 249), reduces the date of Manu to the third century B.C., but adds that "it was undoubtedly composed from older documents," and "may therefore be considered as the last redaction of the traditional laws of the *Mánavas*."

ward of the Upper Jumna—a tract, for ages past, relatively impoverished. For such a deduction we have indirect, but not the less valuable historical authority, derived in parallel coincidence from the comparative geography of the Vedic period, and from the verbatim text of Manu, the integrity of which seems in these matters to have been sufficiently preserved.

The most prolific field among the favoured resorts of our native coin collectors, in 1837, chanced to be the exact section of the country constituting the *Brahmāvarta* of the Hindu lawgiver; and *Thaneswar* (lat. 29° 58', long. 76° 54')—since so celebrated in the annals of the land as the battle-field of successive contending hosts—contributed, at its local fairs, many of the choicest specimens of the inceptive currencies. In this region the Aryans appear to have almost lost their separate identity, and to have commenced the transitional process of merging their ethnic individuality amid the resident population, though still asserting religious and incidentally political supremacy. Such a state of things seems vividly shadowed forth in the ethnological definitions preserved in Manu; and it may possibly prove to be more than a mere coincidence, that the geographical distribution of the limits of "*Brahmarshi*, as distinguished from *Brahmāvarta*," in the same passage, should so nearly be identical with the general boundaries I have elsewhere traced,¹ from independent sources, for the spread of the Bactrian alphabet in its Eastern course.

As I have claimed for the Pre-Aryan Indians the independent creation of an alphabet specially contrived for, and adapted to, their own lingual requirements,² similarly it can be shown,

¹ *Infra*, p. 47.

² Prinsep's Essays, London, 1858, ii. 43; Num. Chron. 1863, p. 226. Later investigations enabled me to take a more comprehensive view of the derivation of Aryan alphabets, of which I subjoin a summary. "At a Meeting of the Royal Asiatic Society, on the 9th April, 1866, The Right Hon. Viscount Strangford in the chair,—Mr. Thomas, adverting to recent controversies respecting the parentage of the various modes of writing in use in Ancient India, spoke 'On the Adapted Alphabets of the Aryan Races.' These were the results of his palæographical investigations: The Aryans invented no alphabet of their own for their special form of human speech, but were, in all their migrations, indebted to the nationality amid whom they settled for their instruction in the science of writing: (1) The *Persian Cuneiform* owed its origin to the Assyrian, and the Assyrian Cuneiform emanated from an antecedent Turanian symbolic character; (2) the *Greek* and *Latin* alphabets were manifestly derived from the Phœnician; (3) the *Bactrian* was adapted to its more precise functions by a reconstruction and amplification of Phœnician models; (4) the *Devanāgarī* was appropriated to the expression of the Sanskrit language from the pre-existing Indian Pāli or *Lāt* alphabet, which was obviously originated to meet the requirements of Turanian (Dravidian) dialects; (5) the *Pehlvi* was the offspring of later and already modified Phœnician letters; and (6) the *Zend* was elaborated out of the limited elements of the Pehlvi writing, but by a totally different method to that followed in the adaptation of the Semitic Bactrian. Mr. Thomas then proceeded to advert to the single point open to discussion involved under the fourth head, tracing the progress of the successive waves of Aryan immigration from the Oxus into the provinces of Ariania and the Hindū Kush, and the downward course of the pastoral races from their first entry

into the Panjāb and the associate crude chants of the Vedic hymns to the establishment of the cultivated Brahmanic institutions on the banks of the Sarasvatī, and the elaboration of Sanskrit grammar at Taxila, connecting the advance of their literature with the simplified but extended alphabet they constructed in the Arianian provinces out of a very archaic type of Phœnician, and whose graphic efficiency was so singularly aided by the free use of birch bark. This alphabet continued in use as the official writing under the Greek and Indo-Scythian rulers of Northern India, until it was superseded by the superior fitness and capabilities of the local Pāli, which is proved by Aśoka's scattered inscriptions on rocks and monoliths (*Lāts*) to have constituted the current writing of the continent of India in B.C. 250, while a similar, if not identical, character is seen to have furnished the prototype of all the varying systems of writing employed by the different nationalities of India at large, from Sind to Ceylon, and spreading over Burmah, till the Indian Pāli meets Chinese alphabets on their own soil in Annam. In conclusion, Mr. Thomas pointed out the importance of the discoveries of Norris and Caldwell, derived from completely independent sources, regarding the Scythic origin of the introductory Indian alphabets."—*Athenæum*, April 14, 1866.

No substantive article was ever prepared or published in further development of the somewhat comprehensive theory thus enunciated; but its purport has been quoted, with seeming approval, and, as far as I am aware, without hostile comment, in France and Germany. The subject has likewise been discussed at two several meetings of the Asiatic Society of Bengal (Journ. As. Soc. Bengal, and Report of Meeting, 6th Feb. 1867, p. 33. See also J.R.A.S. vol. v. (N.S.) p. 421). With the general tenor of these *quasi*-conversational proceedings I have no possible cause of dissatisfaction. Naturally, the living representatives of the Indian

from as valid internal indications, that they originated, altogether on their own soil, that which has so often proved a nation's unassailable heritage of its indigenous civilization—a system of weights and measures, which retained its primitive identity in the presence of successive dominant exotic nationalities. It seems clear that the intrusive Aryans, at whatever period their advent is to be placed, met and encountered a people, already dwelling in the land, of higher domestic civilization and material culture than themselves. Whether their eventual supremacy was due to undiminished northern energy, superior animal physique, or higher mental powers,¹ does not concern us at present; but independent of the inner-life evidences to that effect, a parallel inference might be drawn from the indirect data and the contrasted tenor of the hymns of the Rig Veda,² which, while indicating in their chants an immature social condition, refer almost exclusively to the geography of the Seven Rivers; whereas Manu, at a date but moderately subsequent,³ associates the far higher progress manifested in the body of the work with a more easterly seat of authority, and while asserting no community with things or people beyond, or to the *westward* of the Sarasvatī, arrogates for the existing representatives of the Aryans a dominance over kindred kingdoms, extending, in the *opposite direction*, down the Ganges to Kanauj. But, in demanding credence for the simple gifts of invention arising out of manifest wants among the already thrice commixed, and in so far improved⁴ local inhabitants, as opposed to the Aryan assumption of the introduction of all knowledge, I am by no means prepared to contend that the domiciled races gained nothing in return. The very contact of independently-wrought civilizations, to whatever point each had progressed, would tend mutually to advantage both one and the other; the question to be asked is, which of the two was best prepared to receive new lights, and to utilize and incorporate the incidental advantages within their own body politic? The obvious result in this case, though denoting the surrender by one nation of all their marked individuality, by no means implies that they did not carry with them the full force of their

Aryans resented any notion of their ancestors having borrowed, even more convenient mechanical vehicles for the expression of thought, from the pretendedly ignorant Dravidians of the south; but the facts come up cumulatively against them. To the above list may now (1874) be added "the Cyprian alphabet, embodying the *Greek language*." The former is found to be "of cuneiform origin and so imperfect, as compared with the Phœnician scheme, that as soon as the Phœnician letters became known, it had to vanish."—Max Müller, *Academy*, 15th May, 1874, p. 546.

¹ The Rev. M. A. Sherring (*Indian Antiquary* for Sept. 1872), describes the Brahman, in his modern stronghold at Benares, "as endowed with an extremely subtle, rather than with a powerful mind; which by long habit, perpetuated from age to age, and from family to family, he has trained to the utmost keenness; dogmatic, self-willed, pertinacious, and supremely arrogant and vain."

² Wilson, *Rig Veda Sanhitā*, iii. pp. xviii. xix. London, 1857; Vivien St.-Martin, *Etude sur la Géographie . . . d'après les Hymnes Védiques*, Paris, 1859, p. 89.

³ *Journal As. Soc. Bengal*, 1862, p. 49; Max Müller's *Rig Veda*, preface to text, iv. pp. xxv-xxxiv.

For speculative dates in regard to the Vedas, see also Max Müller, *Sanskrit Lit.*, pp. 244, 300, etc.; Wilson, *Rig Veda*, i. 47, ii. 1; St.-Martin, p. xix; M. Barthélemy St.-Hilaire, *Journal*

des Savants, 1861, p. 53; Dr. Martin Haug, *Aitareya Brāhmana*, Bombay, 1863; Goldstücker, *Pāṇini*, p. 72, etc.

⁴ "We have, therefore, according to the views just summarily expounded, four separate strata, so to speak, of population in India: 1. The forest tribes, such as the Kolas, Santhals, Bhills, etc., who may have entered India from the north-east. 2. The Dravidians, who entered India from the north-west, and either advanced voluntarily towards their ultimate seats in the south of the peninsula, or were driven by the pressure of subsequent hordes, following them from the same direction. 3. The race of Scythian or non-Aryan immigrants from the north-west, whose language afterwards united with the Sanskrit to form the Prākṛit dialects of Northern India. 4. The Aryan invaders who (after separating first from the other branches of the Indo-Germanic stock, and last of all from the Persian branch of that family), advanced into India, drove before them the non-Aryan tribes who were previously in possession of the Punjāb and other parts of the North-West provinces of India, and after organizing Brahmanical communities, and founding Brahmanical institutions in the north, gradually diffused themselves to the east and south, and eventually extended their discipline, and to some degree their sacred language, to the remotest parts of the peninsula."—Muir's *Sanskrit Texts*, ii. pp. 487-8. See also Caldwell's *Dravidian Grammar*.

influence, and affect materially the character of the people among whom, at the end of their wanderings, they introduced a priestly absolutism, which has progressively grown and increased rather than lost power over all India.

Here again a consecutive query forces itself upon our consideration. The Aryans are inferentially supposed to have been in a comparatively barbarous state on their first entry into the land of the *Saptu Sindu*, or "Seven Rivers."¹ There are no direct indications of how long a period they spent in traversing six out of the seven streams, or what opportunities may have been afforded for social improvement during the onward movement; but even by their own showing in the sacred hymns of the Rig Veda, the Aryans, when they had reached the banks of the Sarasvatî, were still but imperfectly civilized. The *Dasyus*, or indigenous races, with whom they came in contact in the Panjâb, may also have been in a more or less backward stage of national development, due to the influences of a *quasi*-pastoral life; while the more settled inhabitants of the kingdoms on the Jumna must be taken to have been well advanced in civil and political refinement.² Is it not, therefore, probable, that when the Aryan tribes, at the close of their migrations, settled in the midst of an organized and homogeneous nation, independent leading spirits may have detected the opportunity for the origination of a new religion, to be evolved out of the rude elemental worship of the immigrants, aided by the mystification of the exotic language which came so opportunely in company?³ The narrow geographical strip, to which the promoters of this advanced creed, as represented in the pages of Manu, confined the already arrogant priestly element intervening between the two nationalities,

¹ St.-Martin, p. 91, "Il semble que la vie sociale des Aryas n'ait commencé qu'à l'orient du grand fleuve (l'Indus), comme si les tribus, à l'époque où elles le franchirent, eussent été trop barbares encore pour avoir gardé la mémoire de leur vie antérieure." Professor W. D. Whitney, of Yale College, one of our most advanced Sanskrit scholars, was likewise struck with the contrast presented in their different stages of Vedic life. He remarks, "The hymns of the Vedas were chiefly composed on the banks of the Indus and its tributaries, when the great valley of the Ganges was as yet unknown to the Aryan immigrants; and they present the elephant as a still-wondered-at animal: while the earliest tidings of India which we have from without show us great kingdoms on the Ganges and the elephant reduced to the service of man both in war and peace."—*The Study of Language*, London, 1867, p. 226.

² Prof. Wilson, while speaking of the ultimate self-development of the Aryans in the Panjâb, remarks, "It [is] indisputable that the Hindus of the *Vaidik* era had attained to an advanced stage of civilization, little, if at all, differing from that in which they were found by the Greeks at Alexander's invasion, although no doubt they had not spread so far to the east, and were located chiefly in the Panjâb and along the Indus" (Rig Veda, ii. p. xvii). I am inclined to question this latter inference. I do not think the civilization evidenced in the text of the Rig Veda by any means up to the mark of that discovered on the advent of the Greeks; indeed, it would be a complete anomaly to suppose that the Aryans, while occupied in pressing their way onwards, in constant hostility with the local tribes, should have made a proportionately greater progress in national culture than they did in the subsequent six or seven centuries of fixed residence in their new homes within the Seven Rivers.

³ The late Dr. Goldstücker, in an essay in the *Westminster Review* (1864, p. 154), has justly remarked that the 1028 incoherent hymns of the Rig Veda constituted but a poor stock in trade whereon to found a new religion. Nor do the Soma "inspired" Rishis to whom they were revealed, or technically "seen," appear, from the internal evidence of their embodied compositions, to have possessed any such mental qualifications as should have been equal to the origination of the higher intellectual structure of Brahmanism. Prof. Goldstücker proceeds, "The Hindu priesthood, however, has managed to demonstrate that 1028 hymns mean in reality a very ponderous mass of divinely revealed works. 'These hymns,' it says to the people, 'you must be aware, speak of ritual acts which are unintelligible to you, and they make allusion also to events, human and divine, which are shrouded in obscurity; hence you must admit that those works called *Bṛdḥmanas*, which explain the proper performance of rites—which give illustrations of those events and legendary narratives, and which contain philosophical speculations to boot—are a necessary complement of the inspired Rig Veda hymns.' . . . 1028 hymns, of a few verses each, are but a poor livelihood for a fast increasing number of holy and idle men: but expand these hymns into a host of works which even the most diligent student could not master in less than several years; apply to their teaching the rule that a pupil must never study them from a manuscript, but receive them orally from his spiritual guide; make them the basis of a complicated ritual, which no one is allowed to perform without a host of priests, and handsome presents to each of them—and what a bright perspective opens itself to a member of the Brahmanical caste, and to those who follow in his track!"

would seem to savour more of an esoteric intention than of any natural result of conquest or of progressive power achieved by the settlement of an intellectually higher class. That the Aryans should be able so completely to divest themselves of their national entity, and leave no trace behind them, would be singular in itself; but the concentration of all god-like properties on a mere boundary-line, so much insisted upon as Brahmanism grew and pushed its forces downwards into the richer countries of Hindústán, while it ignored both the land of the nativity of its votaries and the site of their later more advantageous domestication, forms a fair subject for present speculation and future mature investigation. So that it may be summarized, if the pure Aryan races, in their other migrations, ultimately arrived at contrasted theogonies, adopted divergent forms of speech, and submitted themselves to the prevalent manners and customs encountered in their western lines of settlement, it is asking but little to attribute a dominant influence to the independent civilization of a nation Alexander no more recognized as his ethnic brethren, than the British soldier in later days discovered his kindred in Professor Max Müller's typical Bengali,¹ or in the Sepoy mutineer, who might have claimed a less degraded relationship. But this in itself is a matter only incidental to my special subject, and I return to the question, that if the Aryans were so far instructed on their early sectional immigrations as to bring with them, or subsequently to import and amplify, the Phœnician alphabet, and similarly to secure its transmission, even as a secondary system of writing, over all the country of the Brahmarshis, it would be rash to attempt to place a limit on the amount of Chaldæan or other western sciences that may have accompanied these cursive letters,² which, either directly or indirectly, travelled eastward from the borders of Mesopotamia to the banks of the Ganges. And clearly, if the grammarian Pāṇini's age has been rightly determined by his special modern commentator,³ Bactrian writing, or *Yavanāpī-lipi*,⁴ must have been freely current at Taxila at and before B.C. 543, even as it subsequently became the ruling alphabet in those parts, so as to appear as the Inscription character under Aśoka (B.C. 246) in the Peshāwar valley, and to hold its own as the official method of expression in concurrence with the local Pāli as low down as Mathurá until a much later period. Under these evidences of the spread of Aryan civilization in India, there will be little or no difficulty in admitting that much of what has hitherto been esteemed as purely indigenous knowledge

¹ Max Müller, Sanskrit Literature, p. 13, "Or to convince the English soldier that the same blood was running in his veins and in the veins of the dark Bengalese."

² We have indirect evidence to show that this style of writing obtained very early currency in association with the monumental cuneiform. Wherever, in the ancient sculptures, we see two scribes employed—the one using a style and marking a clay tablet, the other writing upon a flexible substance—I assume that the latter is using the cursive Babylonian character, or what has since been conventionally recognized as Phœnician. See also the subject more fully treated, J.R.A.S. iii. (1868) N.S. p. 245; and a notice of the inscription on the Moabite Stone, B.C. 896, v. (1871) p. 410. M. Renan considers it conclusively established that the Jews used Phœnico-Babylonian letters at the coming out of Egypt in 1312 B.C.—*Langues Sémitiques*, pp. 108, 216.

³ Goldstücker's "Pāṇini, his Place in Sanskrit Literature,"

London, 1861, pp. 12, 227; so also Alwis, Pāli Grammar, Colombo, 1861, p. xli; and Colebrooke's Misc. Essays, ii. p. 4. Early Sanskrit Grammars (of "the three Saints")—*Sūtra* by Pāṇini: rules of grammar in eight books entitled *Aṣṭādhyāya*; comprising 3996 aphorisms. *Vārttika* by Kātyāyana, amending or explaining Pāṇini's rules. *Mahābhāṣya* by Patanjali, interpreting or correcting Kātyāyana's annotations.—Colebrooke's Essays, ed. Prof. Cowell, iii. p. 38.

⁴ Max Müller, Sanskrit Lit., London, 1859, p. 521; and preface to text of Rig Veda, London, 1862, vol. iv. p. lxxiv. "Yavanāpī-lipi is most likely that variety of the Semitic alphabet which, previous to Alexander, and previous to Pāṇini, became the type of the Indian alphabet." This is so far true of the Northern Indian or Bactrian alphabet, but does not apply to the prototype of the local Lāt or Indian-Pāli characters of Aśoka and of his Southern predecessors.

may, even thus early, have been improved and matured by the waifs and strays, of the discoveries of very distant nations, without in any way detracting from or depreciating the independent originality of local thought, or the true marvels India achieved unaided by foreign teaching.

In illustration of the preceding remarks, and as the necessary definition of the boundaries of the kingdom to which our initial series of coins refer, I transcribe in full a translation of the original passage from Manu. The "orbis veteribus notus" will be seen to be closely circumscribed; and, as I have said before, the ancient seats of the Aryan races are altogether ignored in the general summary.

Manu, ii. 17.¹ "Between the two divine rivers, SARASVATĪ and DRISHADVATĪ [Chitang], lies the tract of land which the sages have named BRAHMĀVARTA, *because it was frequented by gods*. 18. The custom preserved by immemorial tradition in that country, among the four *pure* classes, and among those which are mixed, is called approved usage. 19. KURUKSHETRA [modern Dehli], MATSYA, PANCHĀLA [*Kanyakubja*, Kanauj], and SŪRASENA [or Mathurā], form the region called BRAHMARSHI, distinguished from BRAHMĀVARTA. 20. From a *Brāhman* who was born in that country, let all men on earth learn their several usages. 21. That country which lies between HIMĀVAT and VINDHYA, to the east of VINASANA [where the Sarasvatī disappears in the desert²], and to the west of PRAYĀGA [Allahābād], is celebrated by the title of MADHYADEŚA [or *the central region*]. 22. As far as the eastern and as far as the western oceans, between the two mountains just mentioned, lies the tract which the wise have named ARYĀVARTA [or *inhabited by respectable men*]. 23. That land on which the black antelope naturally grazes is held fit for the performance of sacrifices; but the land of MLECHHAS [or *those who speak barbarously*] differs widely from it. 24. Let the three first classes invariably dwell in those before-mentioned countries; but a SŪDRA, distressed for subsistence, may sojourn wherever he chooses."³

It is reasonable to infer, as a general rule, that all schemes of weights devised by isolated peoples, developing their own social laws, should primarily be based upon some readily accessible *unit* of limited proportions, rather than upon any higher measure of weight which advancing civilization and authoritative legislation might impose upon the normal datum. Such a metric test was found ready to men's hands in India, in the seed of the Wild Licorice (*Abrus precatorius*), a plant whose habitat was as extended as its produce was uniform and comparatively exempt from desiccation,—advantages which from immemorial time have secured for the local *rati* a representative place amid the adjuncts of the goldsmith's and money-changer's scales.

¹ Sir W. Jones's Works, London, 1799, vol. iii.; Haughton, Hindu Law, 1825, p. 22. [The italics mark the Sanskrit commentator's interpretations of the original text, which is preserved in the translation in Roman letters.] There is also a French translation of Manu by M. Loiseleur Deslongchamps, Paris, 1833.

² Muir, Sanskrit Texts, ii. pp. 415–418.

³ Mr. Muir has given us a new translation of this celebrated passage, which, as it differs from the above in the introductory portion, I append in his own words.

"The tract, fashioned by the gods, which lies between the two divine rivers, Sarasvatī and Drishadvatī, is called Brahmā-varṭta. The usage relating to castes and mixed castes, which has been traditionally received in that country, is called the pure usage. The country of Kurukshetra (in the region of modern Dehli), and of the Matsyas, Panchālas (in the vicinity of modern Kanauj), and Sūrasenas (in the district of Mathurā), which adjoins Brahmā-varṭta, is the land of the Brahmarshis (divine Rishis)."—Sanskrit Texts, ii. p. 417.

The later Sanskrit writers freely conceded its claim to the title of "Balance or Scales seed" (तुल्यबीज *tulābīja*), and the great Akbar, in the sixteenth century, still continued to recognize its position, under one of its ancient names, in the "red" (سُرُخ *surkh*): for all reductions upon provincial payments of revenue, though, having felt the inconvenience of so inconclusive a test in more exact mint analyses, he ordained that the State trial weights should henceforth be kept in pieces of cut agate.¹

After the *rati*, in ascending order, appears the *māsha*, which, in its acceptance far and near, beyond its Indian home, may almost claim the title of a second *unit*, if not that of a separate *standard*; as such, indeed, its name has come to figure in the indigenous speech as "an elementary weight."² In its static sense this measure also owes its parentage to the vegetable world, in the form of a tangible seed, whose properties of permanence are shared with the associate *rati*, in a hard compact texture and a protecting glazed skin. Unlike the wild *rati*, however, this is a cultivated bean, which has hitherto been identified with the *Phaseolus radiatus*; but none of the seeds of this plant, even the most highly developed, at all approach the required weight: so that the representatives of the true *Māsh i Hindi* (ماشِ ہندی) had to be sought among other varieties, when the prototype was readily traced in the *Phaseolus vulgaris*, which has disappeared from the north-west of India, to be preserved in the agriculture of the south, where, like other congenial products of the soil, it has the advantage in point of growth over its counterpart of the higher latitude, and even discloses a weight slightly in excess of that demanded by the metallic *silver māsha*.

TABLE OF WEIGHTS OF INDIAN PHASEOLI.

						Grains.
Madras.— <i>Phaseolus vulgaris</i>	20 seeds =	70 grains,	average weight			3·5
	"	20 "	77 "	"	"	3·85
	"	20 "	77 "	"	"	3·85
	"	20 "	66 "	"	"	3·3
Picked specimens mount up to	20	"	107·5	"	"	5·37
Average 3·625						
Madras... {	<i>Phaseolus vulgaris</i> ?					
	Black seeds	20	"	134	"	6·7
	Red seeds	20	"	111	"	5·55
S. India.— <i>Phaseolus Roxburghii</i>	40	"	46	"	"	1·105
N. India	"	20	"	10·3	"	·515
"	"	20	"	10·3	"	·515
Oude.—Bakala, <i>Faba vulgaris</i>						
"	"	Black seeds	20	"	96	4·8
"	"	Brown seeds	20	"	94	4·7
"	Valla, <i>Lablab vulgaris</i> ...	20	"	91	"	4·55

The *māsha* is concurrently mentioned as a food grain in Manu (ix. 39); and Prof. Weber remarks, that the name, in its metric sense, is not found in any texts authentically Vedic,³ though it seems that the term, as applied to pulse; occurs in the Atharva Veda.⁴

¹ "By the command of His Majesty they made grains of agate, which were ordered to be used in weighing."—*Āin-i Akbari* (Gladwin), i. 40.

² Wilson, *Glossary of Indian Terms*, *sub voce*.

³ Weber, "Jyotisha," *Berlin Academy Tr.* 1862, p. 82.

⁴ Muir's *Sanskrit Texts*, vol. v. p. 463.

The Vishnu Purāṇa notices *māsha* as one of the earliest cultivated plants, and one that "may be offered in sacrifice."—Wilson's *Vishnu Purāṇa* (edited by Professor Hall.), 1864, page 95.

I exhibit these necessarily imperfect seed tests merely to demonstrate that there once existed, and still remains amid the produce of the soil, a safe and sufficient foundation for the resulting weights contributed by the metal equivalents, with which we are more immediately concerned.

The next progressional step in the table of weights of silver, though seemingly of a more theoretical character, in the abandonment of the seed test, may after all be found to represent a very practical appeal to some definite and well-understood sum or equivalent of value of prehistoric tradition. The denomination in question is variously styled by the term *dharāṇa* (from धृ *dhri*, "to hold"),¹ or by the more suggestive alternative of *purāṇa*, "old," indicating a thing already ancient when Manu's Laws were conceived, and pointing to a period long anterior to the date when the so-termed "Poetical Editor" embodied those Laws in Sanskrit verse. Whether the Aryan designation of *dharāṇa*, as a *quasi*-standard, should be taken to imply finality in the primitive scheme of computation, may be a question; but the closing item in the amplified gold table, to which the same name is given, certainly favours such a conclusion. It is to the surviving representatives of this ancient *purāṇa*, embodying precisely the requisite number of *ratis* of silver, that I shall have to appeal for confirmation of my estimates of weights and as furnishing the earliest specimens extant of Indian money.

The final denomination in the list of silver weights seems to bear a less archaic aspect than the lower gradations of the same series. The multiplication by the decimal *ten* amid the dominant *fours*, which brought it into harmony with an established and identical weight in the gold table, savours of foreign intervention; and the exotic designation of *ṣaṭamāna*, "one hundred measures," equally points to Aryan influences. We can appreciate the motives which induced the northern races to devise the *ṣataraktika*, or "one-hundred rati" piece, out of existing units of value; but it is difficult to divine the object or meaning of "one hundred measures," which do not fit-in with either of the national metric schemes. The specified total of 320 *ratis* is equal to 960 barley-corns. Accepting the latter seed as the natural Aryan *unit*, the $\frac{1}{16}$ part of this sum would be 3·2 *ratis* or 9·6 barley-corns—a broken subdivision, which can only be accounted for by a theoretical rather than a practical assertion of the decimal system, already indicated in the *ten* above adverted to, and the parallel *ten* in the crowning total in the gold series.

Having gone through the metallic items in the table of silver weights, this will, perhaps, be the fittest place to introduce the combined tables of natural products, silver, gold, and copper, from the text of Manu, so as to bring under one connected view the smaller *seed grain* weights, which in the original Sanskrit text are made to originate and lead-up to the larger totals *in metal*, but which I infer to have been in their more minute forms, at least, mere fortuitous subdivisive parts of the central *rati*. The barley-corn may well have claimed an earlier title to the honours of the lesser *unit*; but at the period to which these data refer the local *rati* had clearly established itself as the normal and guiding test of all descriptions of weights.

¹ धृ "to hold, uphold, support," etc.—Wilson, *sub voce*. Secondary meanings extend to, "to weigh in a balance,"—*tulayā dhri* (or without the *tulayā*), "to hold in a balance,

weigh or measure."—Williams's Sanskrit Dictionary. Hence the progression to a standard of fixed value, or to the more material *dharāṇi*, or "steel-yard," is obvious.

viii. 131. "Those names of copper, silver, and gold (weights) which are commonly used among men for the purpose of worldly business, I will now comprehensively explain. 132. The very small mote which may be discerned in a sunbeam passing through a lattice is the first of quantities, and men call it a *trasareṇu*. 133. Eight of those *trasareṇus* are supposed equal in weight to one minute poppy-seed (*likhyá*), three of those seeds are equal to one black mustard-seed (*rája-sarshapa*), and three of these last to a white mustard-seed (*gaura-sarshapa*). 134. Six white mustard-seeds are equal to a middle-sized barley-corn (*yava*), three such barley-corns to one *kṛishṇala* (or *raktika*), five *kṛishṇalas* of gold are one *másha*, and sixteen such *máshas* one *suvarṇa*. 135. Four *suvarṇas* make a *pala*, ten *palas* a *dharana*, but two *kṛishṇalas* weighed together are considered as one *máshaka*. 136. Sixteen of those *máshakas* are a silver *dharana* (or *purāṇa*), but a copper *kārsha* is known to be a *paṇa* or *kārshāpaṇa*. 137. Ten *dharanas* of silver are known by the name of a *śatamāna*, and the weight of four *suvarṇas* has also the appellation of a *nishka*." ¹

ANCIENT INDIAN WEIGHTS FROM MANU (c. viii. § 132, *et seq.*).

TABLE I. MINOR SUB-DIVISIONS OF THE UNIT, THE RATI.

Estimated weight in grs. Troy.

·00135									चसरेणु <i>Trasareṇu.</i>
·01080	8	„	=	1	लिख्या or लिचा <i>Likhyá or Likshá.</i>				
·03240	24	„	=	3	„	=	1	राजसर्षप <i>Rāja-sarshapa.</i>	
·0972	72	„	=	9	„	=	3	„	= 1 गौरसर्षप <i>Gaura-sarshapa.</i>
·5833	432	„	=	54	„	=	18	„	= 6 „ = 1 यव <i>Yava.</i>
1·75	1296	„	=	162	„	=	54	„	= 18 „ = 3 „ = 1 कृष्णल <i>Kṛishṇala or Rati.</i>

TABLE II. ASCENDING INCREASE UPON THE UNIT.

Estimated weight in grs. Troy.

SILVER.

3·5	2	रति	=	1	माषक <i>Rati. Máshaka.</i>				
56·0	32	„	=	16	„	=	1	धरण or पुराण <i>Dharana or Purāṇa.</i>	
560·0	320	„	=	160	„	=	10	„	= 1 शतमान <i>Śatamāna.</i>

GOLD.

8·75	5	रति	=	1	माष <i>Rati. Másha.</i>				
140·0	80	„	=	16	„	=	1	सुवर्ण <i>Suvarṇa.</i>	
560·0	320	„	=	64	„	=	4	„	= 1 पल or निष्क <i>Pala or Nishka.</i>
5600·0	3200	„	=	640	„	=	40	„	= 10 „ = 1 धरण <i>Dharana.</i>

COPPER.

140·0	80	रति	=	1	कार्षापण <i>Rati. Kārshāpaṇa.</i>				
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¹ Hindu Law, or the Ordinances of Manu, by G. C. Haughton, London, 1825, and Works of Sir W. Jones, London, 1799, vol. iii.

Haughton's translation has been slightly modified as given above by my friend Mr. John Muir.

The insertion of the smaller kinds of seed grains in the above table might, at first sight, appear to have been pedantic and purposeless; but in an essentially poor country infinitesimal atoms of gold, gold dust, or silver in like minute proportions, entered largely into the dealings of a people just emerging from the primitive phase of barter. And we may intuitively realize the early use, and indeed the necessity, of such very small change, in the fact that, within our own times, local rulers have continued to issue pieces of money but little removed from what we term spangles.¹ With these diminutive seeds at his command, the untutored villager had only to arm himself with the produce of his own fields, to check the deficiency in the fraudulent goldsmith's tale of weight,² or the merciless discount of the money-changer on the wear and depreciation of the currency.³

In a land where official standards must have been exceptional and difficult of access, the ready definition of denominations and interchangeable counterpoises, afforded by the seeds of the earth, must have proved next to invaluable; hence we find, in the elaboration of these criteria *inter se*, that white mustard had to testify against black, while poppy-seed effected a prompt subdivision of either, and the *average* barley-corn checked and determined the integrity of the *rati*, which again might be used, in its turn, to provide for the sufficiency of the *másha*; so that repeated averages of even such seemingly untrustworthy data might after all produce comparatively crucial results.⁴

¹ The minute gold coins of the south, called by the Muhamadans اختر زر "gold stars," are described by Sir W. Elliot as "just like little scales of gold."—Pathán Kings of Dehli, p. 170; Elliot's Historians, iii. 158. The subdivisional silver currency of Nipál runs into flakes about the diameter of our pea, and but little thicker than the paper this is printed on. The Multán gold rupee is a recent example of diminutive money.

² "But the most pernicious of all deceivers is a goldsmith who commits frauds: the king shall order him to be cut piece-meal with razors."—Manu, ix. 292.

"It is notorious that goldsmiths use one set of seeds for buying, and another for selling."—Jervis, Weights of the Konkan, p. 39. For the curious penalties assigned for trade frauds in later days, see my Pathán Kings of Dehli, p. 164; Elliot's Historians, iii. p. 197. It would startle some of our enterprising purveyors to have to make up their deficient weights by flesh mercifully cut from "their buttocks."

³ Tavernier, speaking of the Indian *seráf* of the seventeenth century, says, "All the Jews that deal in money and exchange in the empire of the *Grand Seignior* are accounted a most subtil sort of people. But in the *Indies* they would be scarcely thought fit to be apprentices to these bankers."—p. 22, edit. of 1677.

⁴ I do not wish to interrupt the independent course of the argument on the ancient data by introducing extraneous and possibly more modern elements into the text; but a reference to the customs of the southern nations of India is instructive in showing that they also relied upon the competency of seeds to secure a good average, and equally that they selected those food grains which were ever ready to their hands in the ordinary cultivation of the soil.

"The following is a table of such ancient weights as are still the basis of the small weights now prevalent throughout India.

2 chával [husked rice] = 1 dhán [=rice in husk].
8 " " = 4 " = 1 rati.
16 " " = 8 " = 2 " = 1 valla.
64 " " = 32 " = 8 " = 4 " = 1 másha.

Later weights.

(96 ratis, or 48 vallas, or 12 máshas = 1 tola).

The table of higher weights is as follows:—

2 chával = 1 dhán, *yava*, or grain of wheat.

8 " = 4 " = 1 rati.

64 " = 32 " = 8 " = 1 másha.

256 " = 128 " = 32 " = 4 " = 1 tank.

Later additions.

(9 tanks = $\frac{1}{4}$ ser, 18 = $\frac{1}{2}$, 36 = $\frac{1}{4}$, and 72 = 1 ser.

40 sers of 26 tolahe = 1 man, 20 mans = 1 khandi, or 560 lbs. avoirdupoise).—Capt. T. B. Jervis, Weights of India, Bombay, 1836, p. 50. [The *chav* or chával is incidentally stated to be a very "constant quantity"; and it is further mentioned that "the large weights in most provinces conform to the weights of coins most in repute, and which form the general medium of commerce."—p. 51.]

"That the weights of the principal current coins of account, which are synonymous with and equivalent to the corresponding weights used in commerce, are raised alike from the weight of certain vegetable grains or seeds, such as those of wheat, barley, rice, or the *Abrus*."—Jervis, p. 261.

General Cunningham has tested in a comprehensive manner several varieties of Indian seed weights, with the subjoined results. The average weights are higher than I should have anticipated; but the locality of growth, richness of soil, freshness of the seed, might all affect the general return. However, as the author accepts my average of 1.75 for the practical working weight of the *rati*, I need not stop to discuss his minor details.

	Grains.	Each.	Ratis in grains.
1000 rice seeds	358.5	0.3585 × 5 =	1.7925
700 barley-corns, husked...	418.5	0.5978 × 3 =	1.7934
500 máshaka, small beans	1791.0	3.5820 ÷ 2 =	1.7910
60 bákala, common beans	546.0	9.1000 ÷ 5 =	1.8200
10 másha, black beans ...	146.0	14.6000 ÷ 8 =	1.8250

—Numismatic Chronicle, 1873, p. 197.

The aborigines, or their early successors, having exhausted the natural products of the soil in the descending scale, the hand of the intruder may be traced in the fanciful addition of the microscopic form of a "very small mote, which may be discerned in a sunbeam passing through a lattice,"—the prototype of Professor Tyndall's "dust,"¹—whose impalpable elements are still further reduced, in later Brahmanical writings, by several degrees.² No attempt, however, seems to have been made by the Aryans to vary or enlarge the seed verifications of the earlier settlers; indeed, when tried by the test of the hymns of the Rig Veda, they would seem to have been very ill versed in the mysteries of the *Flora Indica*,³ an extensive knowledge of which was clearly necessary for, and is evidenced in, the formation of the normal scale of proportions; and consistently we find that, although the Vedic Aryans often invoked their gods to aid their agriculture, the result so little availed them that their efforts in that direction were chiefly confined to the primitive barley, in the raising of which even they do not seem to have been uniformly successful.⁴

It will be seen at a glance that the gold and copper tables in the present series follow a different system to that of the silver weights, the only points of absolute contact being the *rati* basis and the incorporated *pala* or *nishka*, which is introduced into the silver table under another and inappropriate name. The copper denominations are identical with those of the gold only in the 80 *rati* measure common to each, which, however, is differently divided in the two instances, going at once into $\frac{1}{16}$ in the gold calculations, but descending by $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, to the parallel $\frac{1}{16}$ or five *ratis* in the subdivisions of the lower metal. The first deduction suggested by these facts would be, that inasmuch as a crude scheme of exchange in copper probably preceded any effort at a silver currency, the copper and gold weights should take priority in point of date over the associated silver series; but such an inference is not supported by the positive evidence available, which establishes, in a distinct manner, that there were pieces of copper of identical form and fabric with the silver-punch

¹ "Solar light in passing through a dark room reveals its track by illuminating the dust floating in the air. 'The sun,' says Daniel Culverwell, 'discovers atoms, though they be invisible by candle light, and makes them dance naked in his beams.'"—Dust and Disease, p. 291, published in "Fragments of Science," by John Tyndall. London, 1871.

² "Writers on medicine proceed a step further, and affirm that a *trasareṇu* contains 30 *paramāṇu* or atoms," elsewhere "86 *trasareṇus* or *vanṣis*" are stated to be "equal to 1 *marichi* or sensible portion of light," six of which go to the black mustard seed. The Mārkaṇḍeya Purāṇa gives 64 *paramāṇus* to the *trasareṇu*.—Colebrooke's Essays, i. pp. 528–530, 538.

³ Mr. Muir's exhaustive researches only produce the following meagre list: "Fruit (*phala*) is mentioned in the Rig Veda, i. 146, 5; iii. 45, 4. Plants (*ośadhī*, *virudh*) are frequently alluded to, and are even invoked (vi. 49, 14; vii. 34, 23, and 35, 5; x. 97, 1), where some of them are spoken of as produced three ages before the gods; and are said to be divine (*devīh*), x. 97, 4. Some of them flowering and productive and fruit-bearing, and others not."—Muir, Sanskrit Texts, v. p. 463.

⁴ Wilson's Rig Veda, i. pp. xli, lvii; and iii. p. xi.

Mr. John Muir, with his usual care and completeness, has collected the entire series of Vedic references to seeds in the subjoined passage:—"In the Rig Veda (i. 23, 15; i. 66, 3;

i. 117, 21, etc.) frequent mention is made of *yava*, which in later Sanskrit means barley, but according to the Lexicon of Messrs. Böhtlingk and Roth, s.v., appears to have, in early times, denoted corn in general. Rice (*vrīhi*), according to the same authority, is not referred to in the Rig Veda, but is named in the Atharva Veda, as well as barley and *mśha* (beans) and *tila* (*Sesamum orientale*); see vi. 14, 2. Parched corn (*dhāna*) is mentioned in several places of the Rig Veda as an offering to the gods, and in iii. 35, 7, is said to be provided as food for Indra's horses."—Sanskrit Texts, v. p. 463.

With all due deference to my friend Mr. Muir and his Professors, there can be little doubt but that the word *yava* (*jau*), on the plateaus of Central Asia and the slopes of the Himālaya, preferentially implied barley, and not wheat. The parched barley, *sattū* (*chumpa*), of millions of living men still testifies to its inherited use. Prof. Wilson consistently insisted upon the meaning of the word as *barley*, and especially in the last volume of the Rig Veda (iii. 1, 4) he lived to edit, where Indra's horses are said to be fed upon "suitable grains," that is, according to the scholiast, fried barley, *bhrishṭayādn*.

Huc, Voyage dans le Thibet, speaks of "la principale récolte est en *Tsing-kou* ou orge noire, dont on fait le *tsamba*, base alimentaire de toute la population thibétaine, riche ou pauvre."—ii. p. 259.

coins concurrent with the latter. Added to which the claims of this conventional weight of 32 *ratis* (or 56 grains) to remote antiquity are proved by its remaining so much of a fixed institution in the land that it intruded itself amid all the Muhammadan reconstructions, and received full recognition from their rulers as a nominal standard, undisturbed by prior or subsequent changes in the coinage, up to 1450–1488 A.D., at which period Bahlól Lódi had to improvise a new compound copper currency,¹ to supply the denudation of the country of its precious metals by the ruthless plunder of the Mughals under Tímúr at the close of the fourteenth century.²

The advance upon the gold *suvarṇa* of 80 *ratis* to the *pala* or *nishka* is made by the local *four*, while the grand total is created, as in the silver table, by the decimal *ten*. This weight of 80 *ratis*, or 140 grains, which we find thus domiciled in India, as a second or alternative standard for gold and for copper under the denomination of *paṇa*, is the measure to which I have alluded as the near counterpart, whether by hazard or design, of the Egyptian *kat*, the data for which latter weight will be found below.³ But identity in this case by no means necessitates a direct borrowing either on the one part or the other. The Phœnician *drachma*⁴ likewise runs sufficiently close upon the 56 grains of the Indian *purāṇa*; but if it can be shown that the latter amount was arrived at *in situ*, by locally cherished figures applied to an indigenous unit, we can afford to disregard mere approximations. However, this question need not be pressed further, as the 140-grain weight, in its tangible form, only appears amid the coinages of India just so long after the period of the first national pieces as should suffice to establish their age and high antiquity; while its transmission from foreign lands at so late a date need not affect the complete independence of the first efforts of the local mind in the direction of monetary exchanges.

In following up the subject of the derivation of names, we discover a much more distinct association with Semitic traditions in the word *nishka*, for which a Sanskrit root has long been

¹ Pathán Kings of Dehli, p. 363.

² Ibid, p. 313.

³ "Ce signe se lit généralement KAT . . la seule preuve directe qu'on ait de la valeur KAT se déduit du groupe RAKATI, RAKOTIS, nom de la bourgade égyptienne au voisinage de laquelle Alexandre fonda la nouvelle capitale de l'Égypte. . . le manque absolu de toute indication d'une mesure inférieure au *Kat* démontrait que ce poids était l'unité inférieure de la série. Le poids de la pierre (Mr. Harris's five *kat* weight) s'est trouvé égal à 698 grains Troy; admettons le chiffre de 700 pour tenir compte. Nous apprenons en outre (from Mr. Harris's papyrus of Ramses III.) que les subdivisions du *Kat* sont de simple fractions de cette mesure, et non des unités d'une mesure plus petite."—M. Chabas, Note sur un poids Égyptien, *Revue Archéologique* (Paris, 1861), p. 15. (The *outen* was of the value of ten *kat*.)

I annex an interesting account of another very ancient Egyptian weight from the pages of *Nature*. "The grey granite ball has a mean diameter of 2 $\frac{3}{4}$ inches. Its form is that of an orange squeezed somewhat out of its natural shape. Its greatest diameter is 2.88 inches, and its least 2.65 inches. Its surface is uneven, and shows no mark of any tool, and it presents the appearance of having been roughly rounded by being shaken in a vessel with other stones. On the surface when found were several white spots of lime or plaster. In this condition it has been accurately

weighed in the Standards Department, and its weight was found to be 8,324.97 grains. After this weighing, the lime or plaster was carefully removed and preserved, when the weight of the granite ball was found to be 8,322.4 grains, equivalent to 539.282 metric grammes. It next remained for consideration how far the weight of this granite ball, which must have remained undisturbed in the Great Pyramid for not much less than 4000 years (the date more generally ascribed to the construction of the Great Pyramid being 2200 B.C.), agrees with any of the ancient Egyptian weights. According to Dr. Arbuthnot, as quoted by Dr. Young in his article 'Weights' in the *Encyclopædia Britannica*, the ancient Egyptian Mina weighed 8,236 English grains, or 532.683 grammes, thus differing not very much from that of the granite ball. But later authorities do not agree with this weight of the Egyptian Mina. According to them the ancient weight nearest to that of the ball is the Babylonian Mina = 544.5 grammes. Prof. Miller, in his account of the New Standard Pound (p. 755), has shown that in frequent instances the Imperial modern pound, or unit of weight, differs very little from, and is therefore derived from, the ancient Egyptian Mina."—*Nature*, Dec. 26, 1872, p. 48.

⁴ Mr. Burgon, however, calculated that this weight should be placed as high "as 58 and 59 grains."—Madden, *Jewish Coinage*, p. 234.

sought in vain,¹ but which seems to connect itself naturally with נִשְׁקָל "to be weighed" of the Book of Job,² an imperfect form of which verb may have passed to the Aryans with the Phœnician letters already adverted to; however, as the Indo-Germanic races were not bound to respect Semitic roots, they seem to have lost the final *l*, and though they may have caught the meaning and retained the vague sound of the word, they do not appear to have imported or had any knowledge of the weight of the Hebrew *shekel* of 220 grains. So that the integrity of the Indian system of weights remains altogether unaffected by the introduction of a second or alternative name of foreign origin to supplant the original *pala*.

If the empire of Darius really extended to the banks of the Indus, in our acceptation of the term, and his Indian revenues were assessed, within the limits of the Satrapy, in Euboic talents, we might anticipate a possible introduction of the weight in question through that channel, which must, in effect, have represented the old trade route in gold, from the eastward, of many previous generations of men; but the difference between 64·5, the estimated *unit* of the Euboic system, and the full 70 grains of the $\frac{1}{2}$ *kārsha* of the Indian scheme, or more than $\frac{1}{4}$, is too large a margin in the sale and purchase of so precious a metal to admit of any loose identity in proximate elements of the weight. So that we must look for other possible means of its transmission from the west, and perhaps, like the name of the *nishka*, seek to associate its passage with the downward course of the Aryan migrations, through the highways and byways of the Hindú Kush, when its primary identification with some of the undisturbed systems of the Euphrates valley, newly come out of Egypt, before the age of authoritative debasements,³ and its reception by the Aryans with the accompanying Phœnician alphabet, may serve to account for its appearance in Northern India. The geographical spread of these copper weights is not by any means confined to the intersecting Aryan track, as we have indications of their presence in Arachosia, in the earliest Greek coins of Pantaleon;⁴ mention of their currency in the grants and inscriptions of the western coast of India; and frequent reference to their uses in Ceylon.

As ethnic systems of computation and the ruling distribution of numbers are calculated to throw light upon the identities and derivation of weights and measures, it may be useful to compare some of the more ancient methods of procedure. The Egyptians seem to have delighted in vulgar fractions, theoretically dividing the whole number into every possible combination of fractions; but they evinced no preference for *fours*, and definitely accepted the *ten* for the higher estimates.⁵ The

¹ "Nishka is a weight of gold, or gold in general, and it certainly has no satisfactory etymology in Sanskrit. Nothing seems more likely than that it should be derived from Kanishka, the Sanskrit name of Kanerki."—Max Müller, *Sanskrit Literature*, p. 332.

² vi. 2. Ezra viii. 25. Root נִשְׁקָל "to weigh." The Arabic makes it ثَقَلَ, hence مِثْقَال *miškāl*.

³ We must guard ourselves in these matters by the reservation of a possible difference between commercial weights and authoritative official definitions. Mr. Grote has given us a remarkable instance of trade utterly disregarding the action of the ruling power. "It is ascertained, not merely by the evidence of Dardanus,

but by the still more incontrovertible testimony of a published Athenian inscription, that the 'great Athenian talent and mina' continued in exclusive use at Athens, as *weights*, for several centuries after Solon,—that the debasement introduced by that legislator applied only to the coins, drachmæ, obols and their multiples, together with the mina and talent considered as pecuniary denominations apart from actual weight."—Minor Works of George Grote, 1873, p. 114.

⁴ General Cunningham gives the weights of the copper coins of Pantaleon at 138 grs., those of Eukratides variously at 137·19, 138·28, 140·24.—*Numismatic Chronicle*, 1873, p. 217.

⁵ Dr. Birch, *Unpublished Documents and the Harris Papyrus*.

Accad Túránians, on the other hand, to judge by the numbers preserved in the traditions of the land,¹ seem to have had a decided leaning towards *fours*, though, as we learn from the Assyrian translations of their earlier documents, they attached singular importance to the number of *seven*.² The Assyrian system was essentially sexagesimal,³ so that it has been laid "down as a law" for Mesopotamian metrology, that "all the older systems are divisible by either 6,000 or 3,600. The 6,000th or 3,600th part of the talent is a divisor of all higher weights and coins, and a multiple of all lower weights and coins, except its $\frac{1}{3}$ rd."⁴

The sixes and sixties of the banks of the Euphrates⁵ find no counterpart to the southward of the Sewálik range beyond the inevitable *ten* and its necessarily included half, *five*. The Indian system, like all else pertaining to it, had its own independently devised multiple, the *four*. Whether the first suggestion of this favourite number was derived from the four fingers of the hand, or the more suggestive four-footed beasts,⁶ we need not pause to inquire; but the Indians have at all times displayed an unprecedented faculty for figures, and were from the first able to manipulate complicated arithmetical problems, and especially delighted in fabulous totals; but with all this they have ever evinced their allegiance to the old four, which we find in its place of honour in the earliest extant writings and inscriptions. As the nations of the west, to meet their own wants, speedily produced a separate symbol for *five*,⁷ and abbreviated the five perpendicular strokes of the Phœnician into

¹ Rawlinson's *Ancient Monarchies*, ii. 325. "The King calls himself King of the four regions. . . The mention of four districts is curious, since the same number was from the first affected by the Chaldeans." i. 19. "In each of these districts we have a sort of tetrarchy or special pre-eminence of fours." See also Sir H. Rawlinson, J.R.A.S. i. p. 193, *Arba-il*, "the four gods." See further the list of *fours* given under "Numbers in Scripture," in Smith's Dictionary of the Bible; and the *fours* in Cruden's Concordance, Moses of Khorene Geography, p. 363, and History of Armenia, i. p. 6.

² See *Fraser's Magazine*, article by the Rev. A. H. Sayce, June, 1874, p. 709. "The song of seven spirits" (Fox Talbot). The seven spirits were "the guardians of the planets and of the week."

"Seven they (are), seven they are.
In the splendour of heaven seven they (are).
Seven they (are), seven they (are),
Seven twice again they (are)."

Note also the "seven-headed serpent," etc. "The seven gates of Hades," in Ishtar's descent to the infernal regions. Tablet in the British Museum, translated by Fox Talbot. Records of the Past, pp. 146-7. See also Fox Talbot, Journ. R. Soc. Literature, pp. 249, 251. Symbolic numbers in Scripture. The Rev. W. L. Bevan, in Smith's Dictionary of the Bible, remarks, "Three, four, seven, twelve, and forty are 'symbolic signs'; but seven so far surpasses the rest, both in the frequency with which it recurs, and in the importance of the objects with which it is associated, that it may fairly be termed the *representative* symbolic number."

³ Weights and Moneys of Assyria (by the Rev. A. H. Sayce).

8 ig or "royal shekels" = 1 shekel (12dts.).

60 shekels = 1 mana-gina (1lb. 4oz. 8dts.).

2 mana-gina (standard manehs) = 1 maneh (2lbs. 8oz. 16dts.).

30 manehs = 1 talent (82lbs.).

"The contract tablets variously give 1 talent of silver as equivalent to 5 manehs of gold, 5 manehs of silver to 2 manehs of

gold, 10 manehs of silver to 1 maneh of gold."—Records of the Past, 1873, p. 166.

⁴ Mr. R. S. Poole, of the British Museum, has favoured me with the subjoined revised list of the ancient metric systems of the West:

	Grains.	Divisional Scale.	Authori- tative Unit.	Practical Unit. Coins.
Hebrew Gold (dbl.)	1,320,000	÷ 100 ÷ 100 = 132 gr.		
„ Silver . .	660,000	÷ 3000 = 220		220 shekel.
Babylonian (full) .	959,040	÷ 60 ÷ 120 = 133·2		[126·7] 84·5
		or ÷ 60 ÷ 60 = 266·4		[siglos.
„ lesser	479,520	÷ 60 ÷ 60 = 133·2		
Persian Gold . .	399,600	÷ 3000 ÷ = 133·2		129 Daric
Egyptian „ . .	840,000	÷ 600 ÷ 10 = 140		140 Ket.
Æginetan . . .	660,000	÷ 60 ÷ 100 = 110		110
Attic (commercial).	598,800	÷ 60 ÷ 100 = 99·8		
„ (lowered) . .	558,900	÷ 60 ÷ 100 = 93·1		92·3
„ (Solonian) .	430,260	÷ 60 ÷ 100 = 71·7		67·5
„ (ditto double)	860,520	÷ 120 ÷ 100 = 71·7		
„ (ditto lowered)	405,000	÷ 60 ÷ 100 = 67·5		
Euboic	387,000	÷ 6000 ÷ = 64·5		

⁵ Sir H. Rawlinson on the Babylonian Sexagesimal Notation, Journ. Roy. As. Soc. xv. p. 217.

⁶ पद *pada*, पाद *pāda*, "a foot, a fourth," पा *pa*, "a foot," पाई *pai*, "a quarter," पाँच, etc. पादः *pādah* (in Hindu law), "four stages of a law-suit."—Haug, Brahmanism, etc. (Poonah, 1863), p. 9. The Scythic name for *four* is given as *nil* or *nal*, "the analogy of which to the Dravidian *ndil* or *nal* is very remarkable."—Caldwell, p. 274.

⁷ Gesenius, p. 88; M. Pihan, Signes de Numération usités chez les Peuples Orientaux, Paris, 1860, p. 167; and, quoting Oppert, p. 165.

+ and the Palmyrene *y*; the Indians, apart from their indigenous Pāli signs for four, simplified the tedious repetition of the four lines the Bactrian writing had brought with it from Mesopotamia, as seen on Aśoka's inscription at Kapurdigiri,¹ into a cross like a Roman X, which was doubled to form eight, while they left the five utterly uncared for, to follow in a measure the original Phœnician method of IX, or 4 plus 1=5.² Of course the Indian table of weights had to have its lower proportionate atoms accommodated to the weights actually pertaining to the seeds in each instance, but the higher gradations are uniformly grounded upon fours and tens; and to show how distinctly the idea of working by fours was fixed in the minds of men, we find the gradational system of fines in Manu (viii. 337) progressively stated as "8, 16, 32, 64," and *twice* 64; while the exotic element betrays itself, in the distribution of the civil administration, in the "Lords of 10, 20, 100, and 1000 towns," and in "the larger fines which rise from 50 and 100 to 500 and 1000 paṇas." These contrasts are still more distinctly marked in the later legislation disclosed in Yājñavalkya's Dharma Śāstra, though so many of the old penalties are copied from Manu and remain as before, the tendency towards decimal reckoning is patent in all the new fines, etc. So much for the antiquarian evidences; and to prove the custom at the other extreme of the chain of testimony, and its survival within a nation of almost Chinese fixity, it may be asserted that the whole arithmetic of the masses for whose forefathers these laws were enacted, is primarily based on *gandas* or "fours";³ and in the modern bazārs of India the unlettered cultivator may any day be seen having a complicated account demonstrated to him by the aid of a series of *fours*, represented, as the case may be, by cowrie shells, seeds of pulse, or other ready reckoners; but the contrast may be completed by inquiring if the most ardent advocate of Aryan supremacy can advance any title for that section of the human race to a speciality in *fours*.⁴

Among other very favourite numbers among the Indians, and one which seems to appertain to

¹ Journ. Roy. As. Soc. xii. p. 225, *Antiyokena chaturō || || rajano*, "the four kings," Antiochus, Ptolemy, Magas, and Alexander.

² Journal Royal Asiatic Society, xix. p. 12.

³ "A Gaṇḍa is equivalent to four Kauris, 'to count by *Gandas*' signifies to count by fours, or by the quaternary scale, to which the natives are very partial,—in the same way as to count by *gahis* or *panjas*, is to count by fives, or by the quinary scale. As four Kauris make one Gaṇḍa, so do twenty Gaṇḍas make one Pan, and sixteen Pans make one Kahāwan. But there are grades of monetary value even below that of Kauri; for the Hindus seem as fond of dealing with these infinitesimal quantities as they are with the higher numbers, as exemplified in the article *Kaṇṇor*. Thus 3 Krant, or 4 Kak, or 5 Bat, or 9 Dant, or 27 Jau, or 32 Dar, or 80 Til, or 800 Sano, are each equivalent to one Kauri. These are not in practical use in the N.W. Provinces, but are entered in several account books, and many of them appear to be employed in the bazār transactions of Kattak and parts of Bengal."—Elliot's Glossary of Indian Terms, ii. p. 315. The Editor, Mr. Beames, adds, "These minute amounts are of great and constantly occurring use in calculating the shares of proprietors in the enormous Zamindāris in Bihār and Bengal under the perpetual settlement. Each estate, however large, being considered for purposes of partition as one rupee, a person

whose share is only two or three krānts may have an interest in the estate equal to several thousand acres, and worth many lakhs of rupees." Dr. W. W. Hunter gives an instance of the aboriginal uses of *four*. It seems that among the Santals and other lower classes in Bengal "they employ a curious word signifying $\frac{1}{4}$ less. Thus instead of saying $2\frac{3}{4}$ they say $\frac{1}{4}$ less 3, . . . in Bengali *poun-e*, ' $\frac{1}{4}$ less,' Santali *pou-e*, 'four.'"—Rural Bengal, p. 177. But this is merely one of the essentials of vernacular Hindūstāni, where we have پونی $\frac{1}{4}$ less, and سوا $\frac{1}{4}$ more, which is extended beyond the units into hundreds and thousands, as $100 - \frac{1}{4} = 75$, and $1000 + \frac{1}{4} = 1250$. Mr. Caldwell remarks, "It is a characteristic of the Scythian languages that they use for 8 and 9 compounds which signify $10 - 2$ and $10 - 1$. In some instances an original uncompounded word is used for 8, but 9 is always a compound."—p. 281.

⁴ M. Pictet, who has so laboriously collected all and everything pertaining to the early development of Aryan civilization in his *Paléontologie Linguistique*, does not even notice the number. Speaking of the Sanskrit *four*, Bopp remarks, "S'il en était ainsi, il serait littéralement exact de dire que nos ancêtres ne surent compter que jusqu'à trois, et que, dès le nombre quatre, ils ont recouru à une addition (1 + 3). A son tour, cinq contiendrait quatre."—Bopp, edit. Bréal, Paris, 1859, p. xxi.

the very earliest traditions of agricultural communities, is 84 (7×12). The *Chaurāsi* (चौरासी vulgo *Chār-assi*) or groups of 84 villages, like our *hundreds*, abound among the aboriginal divisions of the N. West of India. The number was largely affected by the Buddhists; indeed, everything good or holy seems to have required eighty-four repetitions.¹ In this case the coincidence with the mystic astronomical numbers of the Accad or Chaldæan system is most striking, and can scarcely have been fortuitous. As the dwellers on the Euphrates invoked the sacred numbers of the seven spirits and the Zodiacal 12,² so the Vedic Aryans, in *India*, appealed to the seven horses and the 12-spoked wheel of the Sun (*Āditya*).³

Having gone through the data supplied by Manu, we may now refer to the next succeeding authority on Hindu law, the Dharma Śāstra of Yājñavalkya, whose date is attributed to a period shortly before Vikramāditya, or from B.C. 57 to 50 A.D.⁴ His tables are nearly identical with those already quoted,⁵ one unimportant but possible variant being the assignment of three white mustard seeds instead of six to the barley-corn. There are some apparent contradictions and complications regarding *palas* and *survarṇas*, but no additional information is afforded respecting the weight of the copper-measure of value, which is described in Dr. Roer's translation, equally vaguely with Manu's text, as, "a copper *paṇa* is of the weight of a *kārsha*," and as the English editor justly observes, the tables "by no means satisfactorily define the intrinsic weight and signification of the *paṇa*, which, as the measure of pecuniary penalty," would naturally be of the greatest importance. It is to be remarked that neither Manu nor Yājñavalkya refer in any way to the *courie-shell* currency, which was clearly in these days a seaboard circulation, unheard of in the North-west; nor is any mention made of the *tola*, which now plays so leading a part in Indian metrology. Neither is

¹ See the exhaustive article on this number in Sir H. Elliot's Glossary of Indian Terms, *sub voce*. Sir H. Elliot sums up his remarks on *Chaurāsis* with additional information derived from his own local experience, to the effect that "this is not the place to enter, as fully as the interesting nature of the subject demands, into the inquiry when *Chaurāsis* were first introduced into the mythology and administrative details of India; but it is obvious to remark that the Buddhists and Jains are more partial to the number than the Brahmins; and that the Rājputās, . . . as well as their congeners the Gūjars and Jats, more particularly affect that number than any other tribes at present found in occupation of the soil."

² The Rev. A. H. Sayce, *Fraser's Magazine*, p. 707, "Accad months arranged astronomically formed the Zodiac."

³ Wilson, *Rig Veda*, vol. ii. p. 125 (ii. iii. 8), again, p. 127. "The seven who preside over this seven-wheeled chariot (are) the seven horses who draw it; seven sisters ride in it together (rays of the sun?), and in it are deposited the seven forms of utterance." I have advisedly emphasized the words in *India* in the text above, as the *Sūkta*, in which the foregoing passage occurs, associates it with addresses to *Sarasvatī* (stanzas 49, 52). See also Mr. Muir's summary of the Vedic notices of *Sarasvatī*, J.R.A.S. ii. p. 18; and later references to the town of *Sarsuti*, in my *Pathān Kings*, p. 295. We may contrast this combination of numbers with the *true* Aryan conception, held alike by Vedic and Iranian writers, of the 33 *Devas* of the former and the 33 *ratus* of the latter; regarding which Prof. Haug remarks, "We may gather

with a certain reason, that it was a time-hallowed formula only to count divine things, its bearing and import being not more understood at all (sic) by the Iranians after their separation from the Brahmins."—M. Haug, *Literature of the Parsees* (Bombay, 1862), p. 233. See also Muir, J.R.A.S. n.s. i. p. 263. Max Müller, in speaking of numbers in his new translation of the *Rig Veda*, London, 1869, i. 240, remarks, "To say that seven is a solemn or sacred number is to say very little, for however solemn or sacred that number may be elsewhere, it is not more sacred than any other number in the Veda. . . All these do not prove that the number of 7 was more sacred than the number 1 or 3 or 5 or 10 used in the Veda in a very similar way."

⁴ Lassen, *Ind. Alt.* ii. pp. 374, 470, 510; Dr. Roer, *Translation of Yājñavalkya*, Calcutta, 1859, p. 11; M. Müller, *Sanskrit Literature*, p. 330; Stenzler assigns the work to the second century A.D.

⁵ Sec. 362. Five *kṛishṇala* berries = 1 *māsha*, 16 *māshas* = 1 *suvarṇa*. "Sec. 363. A *pala* is 4 or 5 *suvarṇas*. Two *kṛishṇalas* are a silver *māsha*; 16 of the latter a *dharāṇa*. Sec. 364. A *ṣaṭamāna* and a *pala* are each equal to 10 *dharāṇas*; a *nishka* is 4 *suvarṇas*." . . Note. "In the corresponding *ślokas* of Manu, 10 *palas* are said to be equivalent to 1 *dharāṇa*. We can only reconcile this by supposing Manu to refer to a gold *pala*, and Yājñavalkya to a silver *pala*. The Sanskrit commentator adds, under *Copper*, 4 *kārshas* = 1 *pala*, 1 *papa* = *kāsha*, i.e. $\frac{1}{4}$ *pala*."

the now omnipotent *rupee* ever heard of,¹ which is readily accounted for by the fact that these latter were true Aryan words, whose incorporation into the speech of the country at large was not effected till a later date. So much for the weights and their relative proportions *inter se*. I shall defer any examination of the corresponding equivalents in the English standard till I can apply the results to the extant coins of the period.

Before taking leave of this division of the subject, I am anxious to meet, in anticipation, an objection which may possibly strike philologists as hostile to the general position I have sought to maintain in this Essay; inasmuch as it may be held that the fact of the several divisions of the static tables being expressed in Sanskrit words should, *primâ facie*, imply that the Sanskrit-speaking "Aryans" originated the system upon which the gradational scales were based. But it must be remembered that the entire work from whence these data are derived is written in the Sanskrit language, its very exotic character justifying the inference that it was so embodied, not with a view to vulgar use, but for the purposes of a superiorly educated, or, more probably, of an exclusive class. Moreover, it is to be borne in mind that the speech itself, though foreign, had for many centuries been partially introduced into the land, and constituted the chosen means of expression of the dominant religious and occasional temporal authority. But apart from these considerations, there remains to me the more comprehensive question as to how much the Sanskrit tongue of our modern dictionaries, at this time undergoing the process of elaboration and grammatical definition² on Indian soil, was indebted to the local speech? It can be shown from sound palæographic, as well as from philological testimony, that the intermingling Aryans borrowed Dravidian letters to improve their *then* imperfect alphabet,³ adopted Dravidian words till lately

¹ Note 3, p. 39, *infra*. If the impressed *rupa* "form" came gradually to be applied to silver itself, silver punch-marked coins ought to have preceded the application of the term to that metal.

तुल *tul*, "to lift up" (*i.e.* to weigh), hence *tolah*.

τάλαν, hence *τάλαντον*, "a balance, a pair of scales."

tollo, "to lift up," Gothic *thula*.

² F. Müller, in the *Academy*, Aug. 15, 1872, p. 319, remarks, "The Sanskrit Lexicon, in particular, which at present, like the Arabian, contains an amalgamation of the most discordant elements."

³ Norris, Journ. R.A.S. xv. p. 19, The Scythic Version of the Behistun Inscription of Darius: "I will here express my conviction that the sounds called cerebral are peculiar to the Tartar or Finnish class of languages; that the really Indian languages are all of Tartar origin, or, at least, that their phonetic and grammatical affinities are Tartar; and that the writers of Sanskrit adopted the sounds from their Indian neighbours." Caldwell, Dravidian Grammar, pp. 43, 107, 111: "The cerebral consonants are essential component elements of a large number of primitive Dravidian roots, . . . whereas in most cases in Sanskrit, the use of cerebral consonants instead of dentals, and especially the use of the cerebral *n* instead of the dental *n*, is merely euphonic. None of the cerebral consonants have ever been discovered in any of the primitive languages which are related to the Sanskrit."

"Enfin, la classe des linguales ou cérébrales Sanscrites ne se trouve pas en Zend: mais n'est-il pas remarquable qu'on ne la

rencontre pas davantage dans les langues de l'Europe que appartiennent à la même famille, et que, parmi les mots indiens où se voient les cérébrales, il en soit passé un si petit nombre dans les idiômes européens? Pour moi, quand je pense au rôle que jouent ces consonnes dans les dialectes du Décan, particulièrement en tamoul et en telougou, et au nombre relativement assez restreint des mots sanscrits que les possèdent, je me persuade qu'elles appartiennent en propre au sol de l'Inde, et que leur origine ne doit pas être cherchée en deçà de l'Indus, dans l'ancienne Arie. Il me paraît qu'elles ont été empruntées par le sanscrit aux dialectes primitifs qu'il rencontra dans l'Inde, et admises par lui dans son alphabet, lorsque les Brahmanes sentirent le besoin de le régulariser et de le mettre en parfaite harmonie avec l'état de la langue."—Bournouf, Yaçna, p. cxlv.

"The third class is called that of the linguals or cerebrals, and embraces a peculiar kind of sounds of *t* together with its nasal; a kind not original, but which has developed itself from the ordinary class of *t* sounds. . . . In the Prâkrit this class has obtained great supremacy."—Bopp's Grammar, Wilson and Eastwick, i. p. 14.

"It must be clearly understood . . . that the Devanagari cerebrals were unknown to the language of the (Persian Cuneiform) Inscriptions" (of Darius).—Sir H. Rawlinson, J.R.A.S. x. p. 63.

Hunter's Annals of Rural Bengal (1868), pp. 176, 180, *note*, "According to Schleicher, the Sanskrit alphabet originally consisted of only 15 consonants, and adopted 19 from the aborigines." Prinsep's Essays, ii. p. 151.

classed as Aryan,¹ and, as has been discovered from the inherent evidence of the Bactrian character, appropriated a very large amount of Indian Páli design in the mechanical construction of the vocalic and other portions of their needfully amplified Semitic system of writing.²

These considerations naturally lead to the inquiry whether Drávidian roots do not throw light upon the clearly misunderstood meaning of the passage in Manu, defining the value of a copper *kārshápana*. The result proves that the Tamil *kásu*,³ corruptly “cash,” is described as “coin, money in general;” and, among other grammatical details, it is found that *ponakásu*, *rennikásu*, and *pettalaikásu*, still exist as the vernacular terms severally for gold, silver, and copper coins, while the corresponding verb *kásadikka* primarily means “to coin.” With these hints a new and intelligible translation of the verse in question may be proposed, to the effect that a “*kārshápana* is to be understood (to be) a *coined* (copper) *pana*.” If this interpretation will stand criticism, we obtain new light on the Indian monetary system, to the effect that the earliest Sanskrit authority on such subjects extant recognizes as an ordinary fact the institution of *coined* money; while the context proves how much of Drávidian civilization still remained in the Upper provinces, and how little competent subsequent Sanskrit commentators on Manu’s text were to appreciate anything beyond their own confined views and conventional teachings.

In addition to the above suggestive rectification of the reading of a passage in Manu, tending to prove that coined money was in use at the period of the compilation of the text of India’s earliest lawgiver, any question that might have remained on this subject may be satisfactorily set at rest by the testimony of the published Sanskrit version of Yájñavalkya,⁴ the commentary on which, known as the *Mitákshará*, defines the *kārshika* as “measured by a *kārsha*” (*kārshenonmita*); while the copper *kārsha* itself is described as *támrasya vikára*, or “copper transformed,” i.e. worked up from its crude metallic state into some recognized shape.⁵ This proves, in the one case, that the interpretation of the term *kārsha*, as a *coin*, or fabricated piece of whatever description, is fully authorized; and, in the other, that the copper *kārshápana*, as Manu’s text would imply, constituted the ready referee of weight, which its general currency as a coin of the period was calculated to insure. Indeed, it is curious to note how near an adherence to very primitive customs this state of things discloses, in that the original idea of the use of definite and subdivided weights of metal for commercial purposes is still so closely identified with the secondary function these fixed units had come to fulfil in the guise of money, as circulating

¹ Caldwell, p. 438; Muir, Sanskrit Texts, ii. p. 39; Molesworth, Maráthi Dictionary, p. xxii.

² Num. Chron. 1863, p. 232; Prinsep’s Essays, ii. p. 146.

³ Wilson, Glossary of Indian Terms, *sub voce*. कर्ष *kārsha*, Tamil *kasu*, “cash,” Toda *kas*, Chinese *cash*.

⁴ *Mitákshará*, i. 364.

⁵ Professor Wilson missed the full force of this explanation in adhering to the old translation of Manu, where “*kārsha* or *pana*” are given.—*Ariana Antiqua*, p. 404; Prinsep’s Essays, i. p. 53, note.

Gen. Cunningham, in his late paper on Alexander’s Successors (Num. Chron. 1873, p. 198), has strangely overlooked the above

explanation (published by me in 1864), and has allowed himself to be misled by the text of the *Lilávati*, a modern composition of A.D. 1150, into supposing that because the work in question speaks of “16 *panas* (of copper) being equal to 1 *dharaṇa* or *kārsha* of silver,” that, therefore, the *dharaṇa* weight was called a “*kārsha*.” Whereas his own context from the *Amara Kosha* shows that there was a “copper *kārsha*,” i.e. a copper coin, and equally a “*suvarṇa* or golden *kārsha*,” which last was simply a *suvarṇa*, or the given weight of gold, in the form of a coin. In short, the weight of 80 *ratas*, as the Ceylon texts (note 4, p. 41, *infra*) prove, was immutable, and it was employed, without regard to metals, to measure gold, silver, or copper, down the whole western coast.

measures of value, while they retained their hereditary acceptance as bases of ponderosity.¹ This duality of function remained so essentially associated in the minds of the people, that the revised scales of weights of the British Government, in compliance with local predilections, were adapted and adjusted under a similar system,—the current *Rupee* recommending itself as the initial datum and “foundation of the *Ser* and *Man*,”² and as the criterion and handy test of the higher weights.

I must not close this chapter on weights without a momentary reference to scales and balances. It will perhaps be admitted that any such elaborate system of counterpoises of seeds, as we find in operation among the ancient Indians, must *primâ facie* imply a knowledge of the technical appliance of scales, in their fully developed form.³ To a people whose burthens were habitually slung from the opposite ends of a bambú, and carried on the shoulder, the mechanical advance of first principles into the realization of the balance would demand but slight mental effort.⁴ They also, very early in the civilization of their own land, seem to have learnt the use of the steel-yard, an invention which would likewise be self-suggested, in the every-day employment of the irrigation whip and the nice adjustment of the counter-weight, corrected from time to time with crude lumps of clay or mud.⁵ As the nation did not take to public epigraphy till Aśoka taught them to use nature’s rocks and boulders, and fashioned monoliths, for the purpose, so their sculptures only present themselves under the auspices of advanced Buddhism in the ornamentation of their sacred edifices. Amid the bas-reliefs surrounding their colossal *stupas*, or *tumuli*, we observe many of the incidents of home life depicted with contemporary fidelity. At Sānchi (whose sculptures date before our era) we see the rice or corn being passed into a *measure*,⁶ but scales or balances do not occur. Among the later sculptures referring to the Buddhist faith at Amarāvati,⁷ we discover the steel-yard in full operation.⁸ We know not what further illustrations may be in store for us in association with the more fully draped figures of Gen. Cunningham’s

¹ An early example of the use of the *Kārsha* as a weight is given in the Buddhist Legends (Burnouf, *Introd. Hist. Bud.* p. 258), where one *Kārsha* weight of sandal-wood is stated to have cost “500 *Kārshāpanas*.”

² Prinsep’s *Useful Tables*, ii. pp. 95, 104–6; *Journ. As. Soc. Bengal*, 1834, *Appendix*, p. 61, etc. See also *Journ. As. Soc. Bengal*, i. p. 445.

³ Looking back upon the primitive customs of the people, we find that scales were recognized as a positive institution,—in an original way, they formed part of the machinery of justice in trials by “ordeal,” where men’s condemnation depended upon their gain or loss, at a given interval, in the critical balance.

“Sec. 95. The scales, fire, water, poison, the sacred draught—these are the ordeals for exculpation. . . 98. The scales are (the ordeal) for women, children, aged men, the blind, the lame, Brāhmans, etc. . . 100. When the accused has been placed in the scales by those who understand the art of weighing, a counter weight adjusted and a line drawn. . . 101. ‘Oh scales! made by the gods of old, the abode of truth: therefore do ye, propitious ones, declare the truth and liberate me from suspicion! 102. If I be an evil-doer, then bear me down, oh mother! If I be pure, carry

me upwards.’”—Yājñavalkya, Röer’s translation, Calcutta, 1859. See also *Asiatic Researches*, i. p. 389, “six minutes’ interval”; and Trail’s Report on Kumaon, “*Turāzu ka dip*,” interval, in modern practice, from night to morning; *As. Res.* xvi. p. 173.

⁴ Fergusson, *Tree and Serpent Worship*, Sanchi bas-relief, pl. xxxii. fig. 1, p. 130.

⁵ The extant instrument of the present day is thus described: “The *Dharni* is a sort of steel-yard, in use not only in Nipāl, but in Tibet; it is employed in weighing oil, lumber, ghee, salt, metals, etc., but not grain, and is graduated in a very minute manner. The principal divisions of the scale are the following: The *Dharni*, or extreme degree = 2½ sirs, Bengal weight.

„ *Hummali*, $\frac{3}{4}$ of a *Dharni* = 3 sirs of Nipāl, each 16 *gandahs*.

„ Bessowli, $\frac{1}{2}$ *Dharni*.

„ Barchpul, $\frac{1}{3}$ „

„ Charpul, $\frac{1}{4}$ „

„ Authpul, $\frac{1}{8}$ „

—Kirkpatrick’s *Nipāl*, p. 96.

⁶ Fergusson, pl. xxxii.

⁷ Supposed to refer to 350 A.D. Fergusson, pp. 72, 253.

⁸ Fergusson, pl. lx. fig. 1, and pl. lxxxiii. fig. 1, pp. 194, 224.

latest discovery of the ruined stupa at Bharahut, where we have the unusual advantage of explanatory headings in writing attached to each scene delineated on the stone.¹

MEASURES OF CAPACITY AND LENGTH.

The larger range of an investigation into the parallel measures of capacity or measures of length does not fall within the limits of the present inquiry; but some reference to both one and the other may be necessary to determine how far the Indian races are open to the charge of imitation or of borrowing from other nations.

That measures *per se* in the loose interpretation of handfuls (*δραχμή*), double handfuls (*anjali*), bundles, burthens carried on men's heads, loads of animals, etc., must have been the pioneers of any exact system of weighment, will readily be admitted; and it is curious to remark, that this point

¹ "The most interesting remains are at *Bharahut*, six miles to the north-east of *Uchahara*, nine miles to the south-east of the *Sutna* railway station, and 120 miles to the south-west of *Allahabad*. In our maps the place is called *Bharaod*. It is the site of an old city, which only sixty years ago was covered with a dense jungle. In the midst of this jungle stood a large brick stupa, 68 feet in diameter, surrounded by a stone railing, 88 feet in diameter and nine feet in height. The whole of the stupa has been carried away to build the houses of the present village; but rather more than half of the stone railing still remains. . .

"This colonnade of the *Bharahut* stupa is of the same age and style as that of the great *Sanchi* stupa near *Bhilsa*. But the *Sanchi* railing is quite plain, while the *Bharahut* railing is profusely sculptured—every pillar and every rail as well as the whole coping being sculptured on both faces, with an inscription on nearly every stone. From the characters of these inscriptions, as in the similar case of the *Sanchi* stupa, the erection of the railing must be assigned to the age of *Aśoka*, or about B.C. 250.

"The inscriptions are mostly records of the gifts of pillars and rails, like those of the *Sanchi* and other stupas. But there is also a considerable number of descriptive records, or placards, placed either above or below many of the sculptures. These last are extremely valuable, as they will enable us to identify nearly all the principal figures and scenes that are represented in these ancient bas-reliefs.

"Amongst the numerous sculptures at *Bharahut* there are no naked figures as at *Sanchi* and at *Mathura*, but all are well clad, and especially the women, whose heads are generally covered with richly-figured cloths, which may be either muslins, or perhaps brocades or shawls. Most of the figures, both male and female, are also profusely adorned with gold and jewelled ornaments, in many of which one of the most significant Buddhist symbols plays a prominent part. The earrings are mostly of one curious massive pattern which is common to both men and women. The *ankus*, or elephant goad, was also a favourite ornament, which is placed at intervals in the long necklaces of ladies. . . .

"Amongst the scenes represented there are upwards of a dozen of the Buddhist legends called *Jātakas*, all of which relate to the former births of Buddha. Luckily these also have their appropriate inscriptions, or descriptive labels, without which I am afraid that their identification would hardly have been possible.

"Of illustrations of the life of Buddha during his last appearance there are some good examples. The earliest of these is a medallion containing *Māyā's* dream of the white elephant, which is superscribed *Bhagavato Ukdanti*. A second scene belongs to the reign of *Ajāta Śatru*, King of *Magadha*, in the eighth year of whose reign Buddha attained *Nirvāna*. This is labelled

"*Ajātasata Bhagavato vandate*.—Some of the well-known assemblies of the Buddhists would also appear to be represented, of which one is called the *Jatila Sabha*, of which I know nothing. A second belongs, I think, to a later period of Buddhist history, about midway between the death of Buddha and the reign of *Aśoka*. This sculpture represents a large assembly, and is duly labelled—

"*Sudhamma Reva Sabha Bhagavato Chudd Mahā*.—The words *Reva Sabha* I take to mean the assembly or synod which was presided over by the famous Buddhist priest *Revato* just 100 years after the death of Buddha, or in B.C. 378.

"But the *Bharahut* sculptures are not confined to the legends and events connected with the career of Buddha, as there is at least one bas-relief which illustrates a famous scene in the life of *Rāma*. . .

"A further examination of the inscriptions, and the receipt of Mr. Beglar's report of the completion of the excavations, have made several very valuable additions to my account of the *Bharahut* sculptures, of which I will now give a brief description.

"A bas-relief, labelled with the name of *Pasenajita*, shows the well-known King of *Kosala* in a chariot drawn by four horses proceeding to pay his respects to the Buddhist Wheel symbol, which is appropriately named *Bhagavato dhamma cakam*.

"There are also representations of five separate Bodhi Trees of as many different Buddhas, which are distinctly labelled as follows:—

- (1). *Bhagavato Vipasino Bodhi*, that is, the Tree of *Vipasyin* or *Vipaswi*, the first of the seven Buddhas.
- (2). *Bhagavato Kakusadhasa Bodhi*.
- (3). *Bhagavato Konagamans Bodhi*.
- (4). *Bhagavato Kasapasa Bodhi*.
- (5). *Bhagavato Sakamunino Bodhi*.

"These last are the four well-known Buddhists named *Krākucchanda*, *Kondāmani*, *Kāsyapa*, and *Sākyamuni*."—*Journ. As. Soc. Bengal*, Proceedings for May, 1874, p. 110.

once reached, with what singular tenacity the natives of India, during the progress and onward course of their civilization, have adhered to the more certain test of weight. So that the old measures have long since been driven into the odd corners of the land,¹ and the living population steadfastly decline to recognize the merits or expediency of a late Government proposal to re-introduce measures of capacity.²

With the exception of some incidental references to such estimates in Manu,³ the earliest record of what may prove to be measures of capacity is preserved in the *Atharva Parisishta*, a work for which very high antiquity is claimed, but which, when tested by the internal evidence of the Table itself, may have to submit to a diminution of its assumed age. The Table speaks of Magadha weights and the intervention of Brahmá in the production of the larger measure of the *drona*. As we have seen, at the period of more archaic Vedic literature, the Aryans had not penetrated into Magadha (Bihár),⁴ nor had they brought Brahmá himself into the prominence he ultimately secured by the efforts of his votaries. The Table purports to be applicable to the measurement of *ghí* or clarified butter, but it is a very great question whether *ghí* was not ordinarily weighed and not measured, in its liquid form, then as now. Besides which the initial item and the ascending gradation to the identical *pala* of 320 *ratis*, as given in the gold table, points to a similar inference; while the higher increments by *fours* has an air of local development, and the final *drona* itself of 163,840 *ratis* proves to be a very different weight from the *drona* of four *ádhakas* in the ordinary measure series (Table B. *infra*), which is estimated to weigh only 81,920 *ratis*.

¹ "Another interesting subject on which inquiry should be made is that of the weights and measures of the country, of which many curious specimens are still in daily use to the south of the Jumna. . . The old measures are usually made of joints of bambu, or of brass or of iron, and more rarely of hard wood. . . The commonest name for one of the smaller measures is *Nali*, which means simply a joint of *bambu*. The metal vessels are usually shaped something like hour-glasses, being narrower in the middle than at the top and bottom. Other names are *Paile* or *Pali*, *Dona* or *Drona*, etc. In the Gangetic provinces these old measures have long ago disappeared."—Gen. Cunningham, Archaeological Report for 1871-2, p. xi.

Here is a curious illustration of a lately struggling trade on our Himalayan frontier, which had only partially emancipated itself from rude measures of capacity even in the presence of the civilization of the nineteenth century.

"Grain, salt, borax, etc., are sold by measures of capacity, as follows:

8 Handfuls make one	<i>Phúruwa</i> .
8 <i>Phúruwa</i>	" <i>De</i> .
12 <i>De</i>	" <i>Dobú</i> or <i>Guama</i> .

Within the Ghats (passes) the articles above named are also calculated by the Karbich or *sheep* saddle-bag, taken at four *Nalis*. Grain is also computed by the *Lúyattor*, or large [Goat] *Karbich*=20 *Nalis*; *Swola*, or basket=60 *Nalis*; *T'hanch*, or skin=60 *Nalis*.

"Gold is calculated by the *Sarswo* or *Phetáng*=7½ *Másas*. Gold dust separated into *Phetángs*, each tied up in a bit of cloth, is current as coin at eight rupees the *Phetáng*. Silver is computed at the *Jyú* or *Temashi* (three *Másas*), and the *Gorma* or current rupee=four *Jyú*. The *Jyú* or *Gangatassi* is coined at Ladakh."

—Trail's Report on the Bhotia Mahals of Kumaon, As. Res. xvii. p. 24.

"The people in Spiti (in the Himalayas) have a measure called a *máni* or *thee*, which is a small wooden cup: this is of two sizes, the one used for buying, called *chagreh*, holding 29 lbs. weight of grain; and the other, by which they sell, called *googreh*, which holds only 21 lbs. weight."—Capt. Harcourt's "Kooloo, Lahoul and Spiti," p. 249.

² The subjoined confessions on the part of the British Government in 1867, embodied in an official paper by Col. R. Strachey, F.R.S., are significant: "Measures of capacity are hardly known in Northern India. In Bengal and Southern India they are more frequently used, and, as a rule, are intended to be equivalent to certain determinate weights of grain.

"Throughout India the old standard of weight seems almost universally to have been the current coin of the locality, and the multiplicity of [later] coinages has been, and is still, accompanied by an equal or even greater multiplicity of weights. . . The usual lineal measures are the cubit or *hath*, and the yard or *guz*. . . The *hath* varies from 14 to 20 inches, the *guz* from 28 to 40 inches."

³ *Kumbhas* of grain are noticed in viii. § 320, with the insertion of (a *kumbha* is 20 *dronas* and a *drona* 200 *palas*); in viii. 397, *palas* of cotton-thread are mentioned.

Colebrooke incidentally remarks (i. p. 536), "The measures of grain in common use are probably derived from the ancient *kumbha* and *drona*; but their names are not suggested by any of the preceding tables" [of later date?].

⁴ The Ganges seems to have been the limit of Vedic progress: it is only twice mentioned in the sacred texts."—Muir, vol. v. page 388.

I reproduce the romanized version of the Sanskrit text of the passage relating to these measures, for the satisfaction of those who may desire to follow the original words, and append a tabulated return of the figures contributed by the passage in question, adding, for the purposes of comparison, the sum totals in *ratis* and English grains.

ghṛitapramāṇam vakshyāmi, māshakam pañchakṛishṇalam |
māshakāṇi chatuḥshashṭīḥ palam ekam vidhiyate ||
dvātriṃśatpalikam prastham Māgadhaiḥ parikititam |
dṛthakam tu chatuḥprastham, caturbhir droṇam dṛthakaiḥ ||
dronapramāṇam vijneyam brahmaṇā nirmitam purā |
dvādaśābhyadhikair nityam palānām pañchabhiḥ śataih ||

—Weber, Abhandlungen der Akademie der Wissenschaften zu Berlin, 1862, p. 82.

TABLE OF MEASURES (WEIGHTS?) OF GHĪ.

[Estimated weight in grs. Troy.]

8.75 =	5 Ratis=	1 Māsha.			
560 =	320 „ =	64 „ =	1 Pala.		
17,920 =	10,240 „ =	2,048 „ =	32 „ =	1 Magadha	Prastha.
71,680 =	40,960 „ =	8,192 „ =	128 „ =	4 „ =	1 Aṭhaka.
286,720 =	163,840 „ =	32,768 „ =	512 „ =	16 „ =	4 „ = 1 Droṇa.

The next collection of documents bearing upon measures comes to us, *longo intervallo*, in the form of a compilation, by a comparatively modern writer, Gopāla Bhaṭṭa, embracing all the metric waifs and strays to be found in the later Brahmanical writings dubiously entitled *Purāṇas*.¹

I subjoin Colebrooke's analysis and summary reconstruction of these data.

On the measures of grain Gopāla-bhaṭṭa quotes the authority of several *Purāṇas*. . . . From these may be formed two Tables. The first coincides with the texts of the *Varāha Purāṇa*, and is preferred by Raghunandana; the second, formed on the concurrent authority of the *Bhaviṣhya*, *Padma*, and *Skanda Purāṇas*, is adopted in the *Kalpataru*.

TABLE A.

8 <i>mushṭis</i> (or handfuls)=	8 <i>palas</i> =	4 <i>prasritis</i> =	1 <i>kunchi</i> .
8 <i>kunchis</i>	=	1 <i>pushkala</i> .	
4 <i>pushkalas</i>	=	1 <i>āḍhaka</i> .	
4 <i>āḍhakas</i>	=	1 <i>droṇa</i> .	
20 <i>droṇas</i>	=	1 <i>kumbha</i> .	

TABLE B.

[Estimate in Ratis and grains.] ²				
2,240 =	1,280	4 <i>palas</i> =	2 <i>prasritis</i> =	1 <i>kudava</i> or <i>setakā</i> 14 <i>tolas</i> .
8,960 =	5,120	4 <i>kudavas</i>	=	1 <i>prastha</i> 56 „
35,840 =	20,480	4 <i>prasthas</i>	=	1 <i>āḍhaka</i> 224 „
143,360 =	81,920	4 <i>āḍhakas</i>	=	1 <i>droṇa</i> 896 „
2,867,200 =	1,638,400	20 <i>droṇas</i>	=	1½ <i>khāris</i> = 1 <i>kumbha</i> 17,920 „
28,672,000 =	16,384,000	10 <i>kumbhas</i>	=	1 <i>bāha</i> 1,97,200 „

¹ Col. Wilford, speaking of the methods of writing history in India, gives an apt illustration of the probable value of the *Purāṇas* in this direction. "I was acquainted lately, at Benares, with a chronicler of that sort, and in the several conversations I had with him, he candidly acknowledged that he filled up the intermediate spaces between the reigns of famous kings with names at a venture; that he shortened or lengthened their reigns at pleasure; and that it was understood that his predecessors had taken the same liberties. Through their emendations and cor-

rections, you see plainly a total want of historical knowledge and criticism; and sometimes some disingenuity is but too obvious. This is, however, the case with the sections on futurity in the *Bhagavat*, *Vāyu*, *Vishṇu*, and *Brahmānda Purāṇas*; which with the above lists constitute the whole stock of historical knowledge among the Hindús; and the whole might be comprised in a few quarto pages of print."—*Asiatic Researches*, vol. ix. pp. 132, 133.

² Taking the weight of the *pala* at 320 *ratis*, as in the previous tables.

"I have already quoted a comparison of the *kuḍava* or *setakā*, *hod. ser* [of 1280 ratis, or 2240 grs.], to a practical measure of length; and we learn from the *Līlāvati* [A.D. 1150] that the *khāri* or *khārīka* of Magadha should be a cube measured by one cubit: 'A vessel measured by a cubit in every dimension is a *ghanahasta*, which, in Magadha, is called *khārīka*; it should be made of twelve corners or angles formed by surfaces (that is, it should be made in the form of a solid with six faces). The *khārīka* of Utkala is in general use on the south of the river Godāvarī; there the *droṇa* is the sixteenth part of a *khāri*; the *ādhaka* $\frac{1}{4}$ of a *droṇa*; the *prastha* $\frac{1}{4}$ of an *ādhaka*; and the *kuḍava* $\frac{1}{4}$ of a *prastha*; but the *kuḍava*, formed like a *ghanahasta*, should be measured by three fingers and a half in every dimension. This vessel must be made of earth or similar materials; for such alone is a *kuḍava*.'"—Colebrooke's *Essays*, ii. 537.

I avail myself of the opportunity afforded by the concluding extract to caution my readers against the supposition that everything which is embodied in the Sanskrit language is of necessity *old*. We have been entertained occasionally by being told how our Christian religion owes such and such of its leading elements of faith to Buddhist, Brahmanical, or Zoroastrian teachings; but the progress of knowledge now enables us to turn the tables, and to prove that our antagonists were the real borrowers. The Buddhists have been credited with priority over our conception of the Trinity, but the earliest documents of their creed, dating in 250 B.C.,¹ or nearly three centuries after the *Nirvāṇa* of Buddha, neither suggest nor foreshadow any such combination; though we can well conceive how easily their missionaries may have caught the infection of the Aryan devotion to *threes*. And in this respect it is curious to find the first monumental notice of the "oppressive Aryas" in the immediately consecutive declaration of faith embodied in the Bhabra Edict of Aśoka, which further introduces us to the crude initiation of this most mundane triad, composed of *Buddha*, *Dharma*, *Saṅga*, "Buddha, the law, and the convocation," or assemblage of mortals, to whom had been delegated the task of defining the authoritative creed of the future!²

The Brahmans, in their turn, as has lately been discovered, appropriated without limit or scruple, but of course without acknowledgment, the ideas and the very expressions contained in the New Testament: as these transmuted passages were embodied in the text of the *Bhagavad-Gītā*,³ a work supposed to date as early as the third century A.D., some suspicion might possibly have been

¹ Edicts of Aśoka, J.R.A.S. xii. (1850), 153, and the Bhabra Edict, xvi. p. 366; Prinsep's *Essays*, ii. 12-34; J.A.S. Bengal, vii. (1838), pp. 156, 219, and Bhabra Edict, ix. 616.

² "King *Piyadasi* (Aśoka) to the venerable assembly of Magadha. . . . I proclaim to what extent my respect and favour (are placed) in Buddha, in the law, and in the assembly, . . . having overcome the oppressions of the Aryas (*Aliya*) and future perils . . . (and refuted) the songs of the Munis, the sūtras of the Munis," etc.—Wilson's Translation, J.R.A.S. xvi. p. 366. See also Burnouf, who translates the text by "des facultés surnaturelles des Aryas et les terreurs de l'avenir." The independent facsimile of the original inscription lithographed in Calcutta is clear as to the word अलिय *Aliya*, though the Pandits translate the passage differently.—J.A.S. Bengal, ix. p. 619.

³ "We can no longer doubt, therefore, the possibility of the hypothesis that the composer of the *Bhagavad-Gītā* . . . used Christian ideas and expressions, and transferred sayings of Christ related in the Gospels to Kṛishṇa." The author then proceeds to demonstrate that the composer was acquainted with the

writings of the New Testament, and used them as he thought fit, "weaving into his own work numerous passages, if not word for word, yet preserving the meaning and shaping it according to the Indian mode of thought, a fact which till now no one has noticed."—*Indian Antiquary* (October, 1873), Notice from the Appendix of Dr. Lorinser's *Bhagavad-Gītā* (Breslau, 1869); see also Weber, *Indische Studien*, i. 400; Lassen, i. 623, iii. 398; T. Wheeler, *History of India*, i. 407. But more especially do I desire to quote the conclusions arrived at by one of our most advanced Sanskritists, representing the learning of the south, who, in accepting these preliminary proofs, adds, "Patriotic Hindus will hardly like the notion that their greatest modern philosophers borrowed from Christianity; but as they cannot give an historical or credible account of the origin of these Vedantist sects, if we take the above facts into consideration, there is more against them than a strong presumption, for these doctrines were certainly unknown in India in Vedic or Buddhistic times."—Mr. A. Burnell, Madras C. S., *Indian Antiquary*, Sept. 1873, p. 274.

thrown upon the originality of our received version; but the question of derivation has been comprehensively examined and determined in our favour by Dr. F. Lorinser, whose verdict had already been facilitated by the researches of other eminent Orientalists.

Of all the strange pretensions in this direction to damage our tenets, none appear to be more groundless than the Zoroastrian or Mazdyasan claims of priority in some minor items of faith, though, considering the anomalous nature and very modern period of the reconstruction of the Pehlvi and Zand Texts, we can afford to pass these by without any effort at refutation.¹

Far more important in its bearing upon the present inquiry, however, is the clear and indubitable evidence of a borrowing on the part of the Sanskrit writers of the Greek system of astronomy, and its incidental following of numbers, methods of computation, etc.²

To return to our subject, I conclude that in early times, when systems of weights and measures were in process of adjustment, no discrimination was arrived at between measures of capacity for dry goods and fluid measures.³ In one instance, at least, it is clear that the old "double-handfuls" were indifferently used for fluids. However improbable it may seem, no one who has admired the perfection of an Indian hand will feel any difficulty about its applicability to this purpose: if the four fingers and the thumb are still competent to play the every-day part of a tube or mouth-

¹ Professor Westergaard, one of our pioneers in the modern study of Zand, and who sought knowledge on Persia's own soil and among her children's children, the Pársis of Bombay, pronounced the Zand-Avesta to be "a modern dung-hill, where you may find ancient pearls."—J.R.A.S. viii. o. s. 351.

M. Michel Breal, so favourably known as the editor of the new edition of Bopp's Comparative Grammar, declares that "la géographie de l'*Avesta* est essentiellement fabuleuse."—*Journal Asiatique*, 1862, p. 497.

M. Oppert, examining the genuineness of the Zand texts from another point of view, has satisfactorily established, on the evidence of the alphabet itself, that the writings, in the form we now have them, must necessarily be of comparatively modern date.—*Journal Asiatique*, 1851, p. 281.

As for the Pehlvi versions of the sacred books, Grammars and Dictionaries for which have been reconstructed with so much ingenuity, it may be enough to say that, unlike the recovered Sanskrit, they altogether fail to interpret or reveal the tenor of the ancient inscriptions in the original tongue. Indeed it is almost a case of the blind leading the blind. Anquetil du Perron learnt his first lesson in Pehlvi from the ignorant descendants of the fugitive Pársis in Bombay in the past century, and now the existing generation of Pársis in Bombay quote Anquetil to aid their own deficiencies!

² "Mais tous les traités d'astronomie propres à l'Inde, ceux qui sont réputés les plus anciens comme les plus modernes, sont identiques pour le fond les uns aux autres; ils ne diffèrent que par des modifications de détail, dues à l'infiltration de la science européenne soigneusement dissimulée."—Review of "The Oriental Astronomer" (1848) in the *Journ. des Savants*, by M. Biot, April, 1859, p. 197.

"De ces éléments d'investigation combinés, on verra, je crois, résulter avec évidence, que la science astronomique dont les Hindous se vantent comme leur étant propre, et dont ils font remonter l'établissement primitif à une antiquité fabuleuse,

repose sur des données d'observations qui leur sont étrangères et proviennent d'emprunts historiquement fort récents."—*Ibid.* p. 199.

"Il me reste à attaquer la dernière forteresse de la science astronomique indienne, l'institution des Nakshatras. Mais ce n'est qu'un édifice fantastique, image trompeuse de réalités, et le talisman de la critique le fera évanouir."—p. 418.

"It will be remembered that A. W. von Schlegel looked on the mention of these names (*karkāṭa*, etc.) as a proof not only of the high antiquity but even of the Indian origin of the Zodiac. but since the appearance of Holtzmann's admirable memoir, *Ueber den griechischen Ursprung des Indischen Thierkreises* (Karlsruhe, 1841), it is hardly possible for any one longer to doubt that the truth is quite the other way, and that the converse position is the correct one." . . . For, besides the mention of the *nakshatra*, there are also frequent references to the planets; and we know that the Indian astronomers acquired their knowledge of the planets at a comparatively late period. . . . And the peculiar relations which exist, just in those oldest passages in which the planets are mentioned, . . . appear to point with certainty to the fact that the Indian astronomers were indebted to the Greeks for their knowledge of the planets; for neither Indian names, nor the deities associated with them, afford the smallest explanation of such relations."—Prof. Weber on the Rāmáyana. Translation in the "Indian Antiquary," June, 1872, p. 172; see also Dr. Whitney, *Journ. Roy. As. Soc. i. n.s.* 324-7; Colebrooke's *Essays*, 1873, vol. ii. p. 479, note; Max Müller, Preface to vol. iv. *Rig Veda* (text), p. xlv.

³ A later passage in Manu, defining the duties of *Brahman* husbandmen, after enumerating (x. 86, 7, 8, 9) what things a Brahman is prohibited from *selling*, goes on to say (94), "Fluid things may, however, be bartered for other fluids, but not salt- for anything liquid; so may dressed grain for grain undressed, and *tila*-seeds for grain in the husk, equal weights or measures being taken."—Haughton, p. 354.

piece through which to inhale smoke from the rough clay pipe-head to the complete exclusion of the external air, there need be no distrust as to the capacity of the closed fingers to retain liquids, a faculty which seems indicated in the very meaning attached to the term *anjala*.¹

MEASURES OF LENGTH.

The theory of the measures of length in India, though primarily based upon such natural tests as finger-breadths, spans, and cubits, is consistent in its acceptance of the seed arbitrament of local metrologies, for the purpose of checking the inevitable inequalities of size in men's hands and arms, and defining amounts below the initial finger-breadth. In its later practical development, it connects itself in a singular manner with the circulating media, inasmuch as, though the duties of ancient coins were already *dual*, as authorized weights and current money, the later Muhammadan kings conceived the idea of endowing them with a new faculty as criteria of length. It might have been supposed that roughly-finished hand-made coins, cut transversely from a rounded bar of metal, would furnish a very imperfect *unit* for such a purpose; but so well did the coarse-looking pieces of Sikandar bin Bahlól Lódi (A.D. 1488-1547) fulfil this mission, that independent trials made by General Cunningham² and myself,³ to establish the length of this king's *gaz*,⁴ or yard measure, vary only to the extent of .0211 inches in the 30.0211 or 30 inches, which constituted our several determinations of the standard in question. As the number of *digits* or finger-breadths are specified in concert with the new elements of this measure, we may work upwards through tested tradition and its practical application in the ascertained *unit* of the fifteenth century, and inferentially define the normal size of the finger of the early occupants of the soil.⁵

As the passage relating to the Sikandari *gaz* is of considerable importance, and in its extant form clearly requires rectification, I append the original Persian text, as given in Dr. Blochmann's critical edition of the *Áin-i-Akbari*. In the preliminary sentences, reciting the various yard measures known in Hindústán, *Abul Fazl* enumerates no less than five varieties as current at different times in the country. 1. The long *gaz* of (24 divisions $\times$ 8 barley-corns or) 192 barley-corns. 2. The medium-sized *gaz*, whose dimensions are not specified. 3. The short *gaz* of (24 $\times$ 6 barley-corns or) 144 barley-corns. 4. A *gaz* similar to this last (24 $\times$ 6), but with the further definition that the breadth of the barley-corn is to equal the thickness of six hairs from the mane of a *Yábú* (horse). 5. A *gaz* of considerable antiquity, which is described as measuring دو شبر و دو کره انگشت or "two spans and two finger-breadths" = 26 finger-breadths or 208 barley-corns. The sub-

¹ *انجلا* *anjald*, *अञ्जलि*. "The cavity formed by putting the hands together and holding the palms as if to receive water; as much as can be held in both hands so disposed."—Shakespeare.

² General A. Cunningham, "Ancient Geography of India," London, 1871, i. 273, note, 575.

³ "Pathán Kings of Dehli" (1871), pp. 371-4.

⁴ *گز* "a measure, a rod, an arrow," from *گزیدن* "to prick,

cut off, wound." So *धनु* *dhanu*, "a bow," gave its name to a larger measure.

⁵ General A. Cunningham, proceeding upon the Sikandari data, makes the digit of India .72976 of an inch. My return, which I have always considered as slightly below the mark, gives .72289 of an inch. The Greek *Δακτυλος* was .7584375 and the Roman *digit* .7281.

divisions of this yard are especially noticed as following the quaternary system of sixteens and fours, making the *pahar* $\frac{1}{16}$ (पहर) equal to $\frac{1}{4}$ part of the *gaz*. It is incidentally stated that No. 1 *gaz* "was used for measuring cultivated lands, roads, forts, and mud-walls." No. 2 served for measuring buildings of stone and wood, thatches, religious houses, wells, and gardens. No. 3 was employed for measuring cloth, armour, beds, *palkis*, chairs, carts, etc.¹ Omitting the extraneous notices of seven different Muhammadan yards, we come to a cloth measure (No. 6) specified as (هفت قبضه .. هر قبضه چهار انگشت) "seven hands of four fingers," 28 finger-breadths,² or 224 barley-corns; this yard is, however, stated by some authors to amount to 27 fingers only; and, finally, reference is made to No. 7, the *garmasacht* or Geodetic *gaz* (مِسَاحَة *dimensio*), also of seven hands, more or less, the authoritative length of which is not very clearly determined. After this, the text runs on as follows:—

سلطان سکندر لودھی در هندوستان نیز گزے در میان آورد و آنرا چهل و یک و نیم اسکندری اندازه گرفت * و آن مسین نقدے است گرد نقره آمیز * جنت آشیانی نیم دیگر افزود و بچهل و دو قرار گرفت * مقدار آن سی و دو انگشت بود [the words مقدار آن are omitted in some MSS.] * و از پیشین حکما نیز بدینسان برگذارند * و در زمان شیرخان و سلیم خان که هندوستان از غلّہ بخشی و مقطعی بضط آمد بهمین گز پیمودند * تا سال سی و یکم الہی اگرچہ در کرباس گز اکبرشاهی بود و بچهل و شش انگشت برابر لیکن در زراعت و عمارت اسکندری بکار داشتے * شہریار دانش پڑوہ چون دگرگونگی گزہارا سرمایہ پراگندگی دلہا اندیشید و دست آویز نادرستان پنداشت ہمہ را از میان بر آورد و معتدل گزے را روائی بخشید چهل و یک انگشت * [سی و یک انگشت variant] بیادکرد ایزدی الہی گز نام نہاد و امروز در ہمہ کار دست آویز مردم *

—Calcutta text, i. p. 295.

The tenor of this passage, as far as it relates to the *Sikandari gaz*, is to the effect that Sikandar Lódi, taking advantage, we may suppose, of the improved make of his remodelled coinage, authorized its use as a measure of length. It would seem that he contemplated no interference with the prevalent standard *gaz*, inasmuch as he did not seek to force it to match an even sum of coins, as Humáyún did after him. The *yard* in question is defined as being equal to the diameters of $41\frac{1}{2}$ *Sikandaris* (Sikandari tankahs), and further, the text goes on to state, that Humáyún increased the length of the *yard* to the even total 42 *Sikandaris*, or 42 finger-breadths,³

¹ Gladwin, *Ain-i-Akbari*, i. p. 351.

² Gladwin gives only "twenty fingers," i. p. 353.

³ The text has سی و دو or "thirty-two" fingers, but the context clearly demands the correction to چهل و دو or *forty-two*. I myself did not notice this rather obvious error in the Persian text till I came to calculate the amounts involved. It is curious

to see how constant this mistranscription has been even in the best MSS. All Gladwin's copies must have been wrong in this respect; Prinsep's authorities (*Useful Tables*, 123) shared the mistake, and the only effort to reconcile the obvious discrepancy between the "32 fingers" for the Humáyúni *gaz* and the 41 of the *Iláhi gaz* has been made by some commentator, attempting to assimilate the measures by reducing the 41 fingers of the latter to 31, as shown in the *variant* quoted above.

which form of *gaz* continued in use throughout the reigns of Shír Sháh and Islám Sháh (A.D. 1540-1552) for certain descriptions of measurements, until the thirty-first year after Akbar's accession, when it was found that though cotton goods were measured by the newly-devised *Akbari gaz* of 46 fingers, yet the *Sikandari* (it does not say *Humáyúni*) *gaz* of $41\frac{1}{2}$ fingers, continued to be employed in land measures and masonry, when His Majesty accepted, as final, a reduction of the official yard, for all purposes, to 41 fingers, naming it by the ostentatious title of the *Iláhi* (or divine) *gaz*. The length of this *yard* in English inches, as tested by the coins, will therefore run at 29·92016 inches, or taking the lower estimate (of 30 inches for $41\frac{1}{2}$ Sikandaris) at 29·63849 inches. In the early days of our occupation of Northern India great efforts were made to fix and determine this most important measure, which constituted, in effect, the basis of all the official definitions of superficial areas to be found in the land surveys of our predecessors. Endless calculations and comparisons, derived from the most unpromising materials, were made to ascertain the true length of this *gaz*, ending, however, in so little satisfactory a result as to leave the question open between 29 and 35 inches; but as the majority of actual measures of land made it 33 inches, that amount was adopted in our new legislation, though, as James Prinsep justly remarked, "it is natural to suppose that the *gaz* adopted for measuring the land should vary on the side of excess, and probably all the above [returns] thus derived are too long."¹ But there was a still larger question left unnoticed, as to how far Akbar's decree had been practically enforced beyond the metropolitan provinces, and how many local officials contented themselves with a paper revision of the old estimates, without needless measurements, leaving the village accountants and the occupiers of the soil to their undisturbed ancestral estimates.

I now give Colebrooke's Tables of linear measures.

MEASURES OF LENGTH, ETC.

"On the measures of space Gopála Bhaṭṭa quotes a text from *Vṛiddha-Manu*, which traces these from the same minute quantity as weights.

8 <i>trasareṇus</i>	= 1 <i>renu</i> .
8 <i>reṇus</i>	= 1 <i>bálágra</i> , or hair's point.
8 <i>bálágras</i>	= 1 <i>liksha</i> , or poppy-seed.
8 <i>likshas</i>	= 1 <i>yúka</i> .
8 <i>yúkas</i>	= 1 <i>yava</i> , or very small barley-corn.
8 <i>yavas</i>	= 1 <i>angula</i> , or finger.

From this *Manu* proceeds to larger measures.

12 <i>angulas</i> or fingers	= 1 <i>vitastī</i> , or span.
2 <i>vitastis</i>	= 1 <i>hasta</i> , or cubit." ²

—Colebrooke's Essays, ii. 538.

¹ Prinsep, *Useful Tables*, ii. p. 125. See also the endless variety of Linear Measures of India, pp. 127-8, and Wilson's Glossary, *sub voce*.

² The *Markaṇḍeya Purāṇa* notices two other methods of measuring.

21 breadths of the middle of the thumb = 1 *aratni* (Dhanurdaṇḍa?)
10 ditto = 1 *prādeṣa* or span from the tip of the thumb to the tip of the forefinger.

The *Lilāvati* defines the measures of arable land:

10 hands = 1 *vaṇṣa* or bambú cane.
20 *vaṇṣas* (in length and breadth) = 1 *niranga*.

I annex a curious remnant of ancient custom which still finds a refuge in Kumaon. "The mode of calculation (of the measures of land) in use throughout the hills is, by the estimated quantity of grain which the land will require to sow it. . . . The most common denomination is the *bisi* (*bis* 20, *bisi* 20th), which has

Beyond these primitive measures, advancing civilization introduced the following, which are quoted from various sources :

4 <i>hastas</i>	= 1 <i>danḍa</i> , "a staff," <i>dhanu</i> , "a bow."
10 <i>hastas</i>	= 1 <i>bans</i> or <i>bambú</i> .
2 <i>dandas</i>	= 1 <i>náḍika</i> or <i>náḍi</i> .
2000 <i>dandas</i>	= 1 <i>kos</i> or <i>kroṣa</i> .
2 <i>kos</i>	= 1 <i>gavyúti</i> .
4 <i>kos</i>	= 1 <i>yojana</i> .

MEASURES OF TIME.

DIVISIONS OF TIME, from Manu, i. 64 :

18 <i>nimeshas</i> , or twinklings of an eye	= 1 <i>káshṭhá</i> .
30 <i>káshṭhás</i>	= 1 <i>kalá</i> .
30 <i>kalás</i>	= 1 <i>kshana</i> .
12 <i>kshanas</i>	= 1 <i>muhúrta</i> .
30 <i>muhúrtas</i>	= 1 day and night (according to mean solar time).

now been adopted as a general standard. The regular *bisi* ought, as its name implies, to contain land requiring 20 *nalís* (*nal*, a joint of Bambú) of seed ; its actual extent, therefore, varies according to the quality of soil, as the grain is sown much wider

in poor lands near the summit, than in rich lands at the base of the mountains. . . . Another mode of computation is by the *plough* of two yoke of bullocks."—G. W. Trail, Report on Kumaon, As. Res. xvi. p. 178.

CHAPTER II.

MONEY, UNDER ITS HISTORICAL ASPECT.

I HAVE already extracted from the ancient Code of Manu the contemporaneous definition of the weights of metal in use "for the purpose of worldly business." I will now examine how much of an approximation to the conventional notion of a money currency had been reached at the period of the composition or collection of the Vedas and other archaic Sanskrit texts.

Professor Wilson was the first to proclaim the discovery of a reference to coined money in the Vedas, where, in the enumeration of the gifts bestowed upon the Rishi Garga by Prastoka, the son of Rájá Srinjaya, mention is made of "ten purses" of gold.¹ It is only of secondary importance, at this stage of the inquiry, to seek to determine the exchangeable rate, or the contents of these "*purses*, bags, or chests,"² though I should primarily be disposed to identify them, in their archaic form, with the curious little *red bags*, filled with crude gold to the amount of about sixteen shillings, which still figure in the Trans-Himalayan commerce with Northern India,³ though such an association does not necessarily imply a parallel reduction of size or weight. The leading point established by the context consists in the admission that some recognized scale or measure of value was understood and freely accepted among the Vedic Aryans under the given denomination of *koṣayih*—just as we find in the later civilization of the land a continuous conventional use of closed or sealed bags, such as the traveller Bernier saw at the Court of Aurangzéb in 1663 A.D.,⁴ and whose counterparts but recently appealed to our modern comprehension in the current "*purses*" of the Ottoman Empire. The words *dasa hiranya pinḍán*, "ten lumps of gold," in the succeeding verse of the same hymn, seem to have a much more direct bearing on the general question, and would almost in themselves suffice to establish a reckoning by tale. Had the text merely confined itself to the expression "lumps of gold" in the generic sense, crude and undefined fragments of metal might have been understood; but the deliberate enumeration of ten horses and ten lumps of gold⁵ would seemingly enforce the conclusion that those lumps were determinate sections of the metal of habitually recognized value, or some such divisional portions of gold, without the same limitation as to size, as we see in the

¹ Rig Veda Sanhitá, iii. pp. xvi. and 74; and note, *ibid*.

² Text, "*Daśa koṣayih*." COMMENTARY, "*Suvarṇapūrṇán daśakoṣān*."—H. H. Wilson, iii. p. 474. That it was the custom to employ bags, with fixed and defined quantities in each, at or about this period, may be gathered from the extract from the Mahábhárata quoted below, p. 38.

³ "Gold dust separated into *Phetings* (covered money?), each tied-up in a bit of cloth, is current as coin at eight Rupees the Phetáng."—Trail's Report on the Bhotia Maháls of Kumáon, As. Res. xvii. p. 24 (passage quoted at large, p. 25, *supra*).

⁴ In giving an account of the elephant combats, he mentions that the courageous Mahauts (or drivers) had "sacks of Peyssas"

given to them as rewards.—iii. p. 67, English edition of 1672. The *Ain* or Institutes of Akbar have preserved a record of the Court custom, of always keeping "ready, in the palace, large sums in *dáms*, every thousand of which are kept in bags."—Gladwin, *Ain-i-Akbari*, i. 3. The term for purse here made use of is *سَهْسَه*, *sahsah*, "a thousand," *تَوْرَا* *torā*. In Persian *بَهْلَه* *bahlah*, "a purse," hence *kharij-i-bahlah*, "expenditure from the privy purse."

⁵ Rig Veda Sanhitá, 4th ashtaka, 7th adhyāya; sūkta xlvii. verse 23, "I have received ten horses, ten purses, clothes, and ample food, and ten lumps of gold, from Divodása."

parallel cases of the silver and copper of which Manu speaks, and whose extant survivors find a place in our medal cabinets. The near juxtaposition of the term *hiranya piṇḍūn* with the preceding *koṣaiyih* seemingly points to refined or wrought metal, in contrast to the *native* gold inclosed in the latter. It is probable that the former consisted of buttons of cast metal, which originally took the form of rough balls or imperfect pyramids,¹ which in process of time were hammered flat, hall-marked, and assimilated to the later productions of the domino shape, whose edges were ordinarily cut at hazard to reduce them to accurate official weight.

In addition to this allusion to pieces of gold, which I suppose to have been in point of value *suvarṇas*, the Vedas, on two occasions, distinctly name the *nishka*. The first reference to this money-weight is to be found in a hymn by that most mercenary Rishi, Kakshivat,² devoted to no deity, but to the glorification of Rájá Bhávayavya, a mundane prince dwelling on the Indus, whose beneficence is eulogized in an extended play upon the number of his gifts, among which the Rishi confesses to having “unhesitatingly accepted 100 *nishkas*, 100 vigorous steeds, and 100 bulls;” evidencing, as in the previous instance, a numerical computation by pieces of recognized value much in advance of the primitive test of scales and weights. Again, in a subsequent *súkta*, Gr̥tsamada, a Rishi of some celebrity,³ in addressing the divinity Rudra, says, “He shines with brilliant golden ornaments.” . . . “Worthy thou bearest arrows and a bow; worthy thou wearest an adorable om̐iform necklace.”⁴

The mediæval scholiast substitutes the word *hára*, “a necklace,” for the *nishka* of the original text,⁵ an interpretation which is followed by the modern translator. It would seem that one of the derivative meanings of the word *nishka*, as in the parallel instance of *dīndra*,⁶ came in process of time to apply to “an ornament of the neck,” the component elements supplying the designation in either case. From the passage in question we may reasonably infer that the *nishka* of the Vedas had, even then, attained so much of a definite and unvarying form, and partial fashioning, as to be suitable for decorative purposes in its current shape,—a deduction which would further imply that

¹ The word **पिण्ड** *Pinḍ* has survived in the Panjáb with the meaning of “village,” rather than “hill,” *ex. gr.* Ráwal Pinḍi, Pinḍ Dádan Khán, etc. Numismatists may prefer to follow the mechanical traditions of the south, in “the Canarese *gulige* (Sanskrit *gutika*),” which Sir W. Elliot mentions “was the ancient name of a class of small spherical coins.” See figs. 3, 4, 5, pl. vii. vol. iii. Madras Journal (1858). Whence, also, the later gold *adal*, *gutkah* (*gutká*) of the *Ain-i-Akbari*, i. p. 32. See my *Pathán Kings of Dehli*, p. 420.

² Wilson, *Rig Veda Sanhitá*, ii. p. 17. See also i. 312, 316, etc. ³ Wilson, *Rig Veda Sanhitá*, ii. p. 207.

⁴ Wilson, *Rig Veda Sanhitá*, 2nd ashtaka, 7th adhyáya; *súkta* xxxiii. vol. ii. pp. 291–2. The original Sanskrit text is subjoined for reference.

अहँन्वि भषि सायकानि धन्वाहँन्निष्कं यजतं विश्वरूपं ।

अहँन्निदं दयसे विश्वभखं न वा ओजीयो रुद्र तदस्ति

॥ १० ॥

⁵ Max Müller, *Rig Veda*, ii. p. 579.

⁶ Max Müller (*Sanskrit Literature*, p. 245), remarks—“The Sanskrit derivations of the word *dīndra*” are clearly fanciful, and “the Sanskrit *dīndra* is in reality the Latin *denarius*.”

“Cosmos Indicopleustes remarked that the Roman *denarius* was received all over the world; and how the *denarius* came to mean in India a gold-ornament we may learn from a passage in the *Life of Mahāvira*. There it is said that a lady had around her neck a string of grains and golden *dīndrs*.”—*Kalpa-sūtra*. Stevenson, p. 45. See also Colebrooke (Cowell’s edit.), iii. 478; Prinsep’s *Essays*, i. p. 246; J.A.S. Beng. vi. p. 459.

We have very early quotations of the word *dīndr* in the Gupta Inscriptions. Chandra Gupta’s Inscription on the eastern gate at Sanchi specifies a grant of 25 *dīndrs* (Prinsep’s *Essays*, i. p. 246). Chandra Gupta II. and Kumára Gupta, in their Inscriptions at Garhwá, each record grants of 10 *dīndrs* (Gen. Cunningham, *Arch. Report*, 1873, p. 55).

the piece itself was understood or admitted to be of a constant and uniform make, and that, in effect, it carried its description in its name.

It is a question whether it is not also necessary to amend the translation of the adjective, *Viśvā rūpa*, from "omniform," to the more intelligible "pervaded," or covered "with forms" or symbols, a rendering in complete harmony with Burnouf's parallel passage of *lakṣaṇāhatam dīnāra dṛayam*, "deux dīnārs marqués de signes,"¹ and which singularly accords with the state in which we find the silver money of the period. Should any difficulty be felt at the supposition of the adornment of a god with so obvious a work of man's hand, it may be said that bows and arrows are scarcely divine weapons;² but the inherent tendency of lightly-clad imperfectly domiciled races to wear on their persons their more valuable and easily portable wealth would naturally suggest the notion that the deities followed a similar practice; and the expression instructs us that the people among whom it was uttered were in the habit of hanging round their necks sections of the precious metals, even as their successors in the land for ninety generations have continued to do; having thereby, in many instances, undesignedly preserved for posterity the choicest and most interesting numismatic memorials of olden time.

Another suggestion of Professor Wilson's, tending to show that money was current during the Vedic period, refers to the passage in the fourth aṣṭaka, second adhyāya,³ verse 6, where the Ṛishi Samvaraṇa, in addressing Indra, proceeds, "do thou give us riches, and brilliant wealth." The words for the latter are *enim rayim*, literally "white riches," and the question arises whether this term does not apply to silver money as contrasted with the frequent allusions to gold. Such an inference is greatly supported, on the one part, by the frequent use of the adjective "yellow" in connexion with gold in the Vedic texts; and, on the other, by the conventional Oriental expression of "red and white riches," as applied to gold and silver money.⁴

Prof. Weber has collected from the Sūtras and later Vedic writings a number of references to money weights,⁵ the most interesting of which are the notice of the silver *ṣaṭamāna* by Kātyāyana, the immediate successor of Pāṇini (xx. 2, 6), and the mention of a "yellow-gold *ṣaṭamāna*" (*hiraṇyaṃ suvarṇaṃ ṣaṭamānam*) in the Satapatha Brāhmaṇa (xii. 7, 2, etc.), showing that the term *ṣaṭamāna*, which is given by Manu exclusively as a weight of silver, had come to be used indifferently with its coincident metric denomination, the *nishka*, which in earlier times specially implied a measure of gold.⁶ The quotation of *suvarṇasālākāni yavatṛiyaparimitāni* from the Śruti⁷

¹ Burnouf introduces this and a second passage about *dīnārs* with the subjoined remarks: "Ce mot est très-rarement employé dans les livres Sanskrits du Nord, et je ne l'ai jamais rencontré dans ceux des Sūtras que je regard comme anciens, au moins pour le fonds. Je n'en puis, jusqu'à présent, citer que deux exemples. Le premier est emprunté à la légende de Hiraṇya pāṇi, laquelle fait partie de l'Avadāna ṣaṭaka" . . . [two *dīnārs* as above]. The second example cited is from the Divya avadāna, where Pushpa mitra, last of the Maurya kings of Magadha, promises 100 *dīnārs* for the head of each Buddhist sramana.—Introduction à l'Histoire de Bouddhisme (Paris, 1844), p. 423.

² Xenophanes . . remarks "that men seem to have created their gods, and to have given to them their own mind, voice, and

figure; that the Ethiopians made their gods black and flat-nosed, the Thracians red-haired and blue-eyed—just as cows or lions, if they could draw, would draw their gods like cows and lions."—Max Müller, Science of Language, ii. p. 388.

³ Rig Veda Sanhitā, iii. p. 288.

⁴ "red and white coins."—Tārīkh-i-Alāī, MS. Cf. also the Arabic دينار البضا "white *dīnār*."

⁵ Zeitschrift, vol. xv. 1861, pp. 138-9.

⁶ See also the quotation from Yājñavalkya, section i. sl. 364, reproduced above, at p. 20, note 5.

⁷ Mādhava in Kālanirṇaya. *Śruti*, "sacred revelation," as opposed to *Smṛiti*, or "tradition."

is also of importance, the designation of *salūkā* identifying the gold piece directly with the parallel issue of silver, the residuary specimens of which retain the name to this day in the south of India.¹ But the definition of the weight of the gold *salūkā* as three barley-corns (or one *rati*), and the associate mention of a *rati* of gold (*hiranya kṛishṇalāni*), has a more direct bearing upon the sub-divisional currency, which is again brought home to us by the metrologies of the Drávidian peninsula, in the Telugu *béda*, “a coin representing the *gunja* or *rati*:”²—while the quotation of *ṣata kṛishṇala* and *raktikā ṣata* explains the derivation of the most important numismatic unit in the history of India—the concurrent pieces of gold and silver of 175 grains forming the higher standards of the Pathán Kings of Dehli, the prototypes of the East India Company’s “Mohurs and Rupees.”

Having obtained from the Vedas themselves so much of an indication of the use of circulating monetary weights at the very early period to which those hymns are now admitted to belong, my task in proving an obvious advance upon the rudimentary phase of the science of money, under Manu, will be simple; especially as so much has already been incidentally brought forward tending to dissipate any remaining doubt as to the existence of a *coined* copper currency much anterior to the epoch when the customs and usages of preceding ages had to be acknowledged as the practical basis of, and as far as might be conciliated in, the new code³ which was to make Brahmanism absolute. As I have already stated, there is no direct evidence to show what technic art had achieved in those days, or what form or finish was given to the current money; but as with the copper, so with the divisional parts of gold and silver, in the table quoted from Manu (viii. 131–137), their classification represents something more than a mere theoretical enunciation of weights and values, and demonstrates a practical acceptance of a pre-existing order of things, precisely as the general tenor of the text exhibits these weights of metal in full and free employment for the settlement of the ordinary dealings of men, in parallel currency with the copper pieces, whose mention, however, is necessarily more frequent, both as the standard and as the money of detail, amid a poor community. Their use in the higher totals would seem to refer to an earlier stage of civilization, or to a time when the interchangeable values of the different metals were less understood and even more imperfectly determined. There is no attempt to define these relative values, and the omission may, perchance, have been intentional; though some such scale would soon settle itself by custom, and the lawgivers may wisely, in their generation, have abstained from attempting, like our own statesmen, to fix the price of gold for all time, to give permanency to an ephemeral balance, or otherwise to swerve from the ancient simplicity of their own copper standard. Neither need there be any distrust of the

¹ Sir Walter Elliot, Madras Journal of Lit. and Science, 1858, p. 224. *Salūku* (Telugu), “A dent or mark on a coin denoting its goodness.”—Wilson, Glossary. The leading meaning of the Sanskrit *salūkā* is given as a dart, an arrow; one of its derivative meanings is “an oblong quadrangular piece of ivory or bone used in playing a particular game; a domino.”—Wilson, Sanskrit Dictionary. Among the surgical instruments of the Hindus there were no less than twenty-eight varieties of *salūkās*, “rods or

sounds,” so that the name of the coin may have been derived from the *punch* or tool with which it was marked.—Wilson’s Works (Dr. Rost’s edit.), iii. p. 385.

² Sir W. Elliot, Numismatic Gleanings, Madras Journal of Lit. and Science, p. 44.

³ “No greater crime is known on earth than slaying a Brahman.”—Manu, viii. 381.

contrasted passages, as representing different stages of national advancement. The collection of a code of human laws would necessarily embrace the progress and practical adaptations of many generations of men, the older formulæ being retained in the one case, side by side with the more recent enactments and their modified adjuncts. In a compilation of this kind, the retention of such apparent anomalies would indeed be a negative sign of good faith; and as we have to admit considerable uncertainty as to the exact epochs of the origin, application, and classification of these laws, and a still greater margin of time to allow for their versification and ultimate embodiment in Sanskrit writing, it would be as well not to lay too much stress upon their internal evidence, when all the deductions we need can be established from external testimony.

Among other ancient authorities that may be cited incidentally for the purposes of the present inquiry are the popular epics of Indian tradition, the Mahābhārata and the Rāmāyaṇa. I need not stop to discuss the age or internal consistency of these works,¹ but what is more pertinent to the matter in hand is the curious contrast presented by the narrative portions of the several texts. The one refers naturally to the advanced civilization of a central capital on the Ganges with all the accessories of town life,² while the other concerns itself chiefly with the rude discipline of a regal house in Oude, from whence the sons and daughter-in-law of the king go forth, at short notice, clothed in "bark-garments," to wander over forest lands for near upon the "twice seven" years of sentenced banishment.

Under these conditions, we can expect to find little or nothing in the latter poem having any reference to coins or their less mature prototypes;³ indeed, as I have elsewhere pointed out, from the geographical distribution of the extant examples of ancient Indian mintages,⁴ no coins whatever seem to have been produced, in early times, beyond a vague line to the east of the Jumna. In addition to which, we now know that there was *no* money current in Bengal till the Muhammadans carried it down with them on the conquest of the country in A.D. 1203.⁵ And, furthermore, even

¹ Dr. Rost's edition of the Works of H. H. Wilson, iii. p. 227; iv. p. iv; Max Müller, Sanskrit Literature, 1859, pp. 36, 41. "The Mahābhārata is also called the fifth Veda," 44, 62. A very comprehensive examination of "the date of the Mahābhārata" has lately been made by Prof. Ramkrishna Gopal Bhandarkar, and published in the Journal Bombay Branch Roy. As. Soc. 1872, p. 81, in which he proves, from the mention of this work in Pāṇini's Sūtras (vi. 2, 38), and in other texts of even earlier date, such as the Aitareya Brāhmaṇa and Aśvalāyana Gṛhya, that it must claim a very high antiquity, at all events prior to the age of Pāṇini, whom he places three centuries or more before his commentator Patanjali, whose own date is fixed on good evidence at B.C. 178-142; making the great epic therefore anterior, at the least, to B.C. 478.

² Talboys Wheeler, History of India, London, 1867, vol. i. "The Mahābhārata" (Mr. Halhed's original translation), p. 41, *et seq.*; vol. ii. (1869) "The Rāmāyaṇa," p. 1, *et seq.*; Mrs. Manning, Ancient and Mediæval India, 1869, vol. ii. p. 1, *et seq.* Mrs. Manning's work has scarcely received the attention that it deserves; perhaps in its higher range it was somewhat beyond her powers; but we must now recognize the fact that all

its more material data were sanctioned, if not inspired, by Prof. Goldstücker; while the proofs of each sheet had the advantage of the supervision of Dr. Rost.

³ The passage at p. 5, speaking of no one "giving less than 1000 Rupees to the Brāhmins," must clearly have been interpolated. Rupees certainly were not invented in or about 500 B.C.

⁴ "In my own individual experience, *no* ancient coins, in the general sense, are found below Allahābād. Benares occasionally contributes a transported specimen; but the limits of search, approved by my own native coin collectors starting from our headquarters, at Saharunpore or Dehli, gradually ceased to extend below Mathurā. On the other hand, we know how singularly the surviving representatives of the earlier Greek currencies localized themselves in Behgrām, and how prolific the soil of the Panjāb still continues to be in the numismatic remains of the more settled Indo-Bactrian and Indo-Scythic kings."—J.R.A.S. i. N.S. (1865) p. 473.

⁵ Minhāj-us-Sirāj, the author of the Tabakāt-i-Nāsiri, mentions this fact on the occasion of his own visit to Lakhnauti in A.H. 641. Calcutta text, p. 149. See also my Pathān Kings of Dehli, London, 1871, p. 111.

in this century the East India Company had to condescend to receive the revenues of certain portions of that province in the *Cypræa moneta* or Cowrie shells of the Maldive Islands.¹

On the other hand, the story of the wars of the Páṇḍavas with their stronghold at Hastinápúr, on the Upper Ganges, and the rival city at Indraprastha, abounds in incidental notices of money, in what may be termed its full development—that is to say, exchangeable money, coined money, and money in such subdivisions as might be freely scattered amid a city crowd, whose hard-won pieces should be immediately available for the purchase of food or other necessities.

In speaking of *Arjuna's* entrance into the city of *Hastinápúr*, it is mentioned that “chains and wreaths of flowers were let down upon their heads from the verandahs, and large presents of money were scattered in handfuls, so that the poor and needy in the city became all rich from the quantity they picked up.”

Again, among *Raja Yudhishtira's* presents on the performance of the *Aśwamedha*, or horse sacrifice, there is specified “one crore of gold coin.”—Mr. Halhed's translation of the *Mahábhárata*; Wheeler's *History of India*, i. pp. 417, 433.

In another passage we are informed that during *Yudhishtira's* gambling with *Sakuni*, he “lost every game. He first lost a very beautiful pearl; next a thousand bags, each containing 1000 pieces of gold; next a piece of gold so pure that it was as soft as wax.”—Wheeler, i. p. 179. See also *passim*, pp. 214, 405.

The above extracts will suffice perchance to establish all that is at present claimed regarding the free use of money at this period.

But one of the most interesting contributions to Eastern antiquities, in the pages of the *Mahábhárata*, crops up in the form of an acknowledged local belief,² however vague, in the gold-producing ants of the early Greek authors,³ about which English scholars were once greatly perplexed.

A somewhat summary attempt at the reconciliation of the incredible character of this oft-told tale has lately been suggested in the possibility of the *Mύρμηκες* of Herodotus (the Persian *مور Mūr*)

¹ The English reader may like to follow the practical working of the cowrie currency, as told in the subjoined graphic account of *a day's trade*, evidently contributed by an eye-witness:—“Potdars, or money-changers, are a very numerous class; but many of them having no shop, sit in the open market with heaps of cowries placed before them. In the more rural quarters the money-changer goes to market with a bag of cowries on his head, or if a rich man, with a loaded ox, which if strong may carry to the value of 150 rupees. All the early part of the market he sells cowries for silver to the people who wish to purchase goods, and in the evening the various hucksters bring back their cowries and exchange them for silver. In the morning the money-changer usually gives 5760 cowries for a rupee, and in the evening he gives a rupee for 5920, which is a profit of $\frac{1}{36}$ part on every good mint rupee, besides a fluctuating *batta* or exchange on all others.” And yet the English commentator of the day adds, they “are in fact an excellent circulating medium!”—Hamilton's *Hindustán*, 1820, i. p. 40.

² “(One of the most remarkable passages of this description next ensues, and explains, most satisfactorily, the origin of the extravagant fables related by Greek writers, respecting the gold-making ants of the auriferous deserts of Northern India. It is said that ‘the people who dwell under the pleasant shade of the

Kíchaka-vénus (a kind of willow) and along the *Sailodá* river, between the *Meru* and *Mandara* mountains, who are called *Khasas*, *Pradaras*, *Páradas*, *Ekásanas*, *Arkas*, *Kulindas*, *Tanganas*, and *Parutanganas*, brought to *Yudhishtira* lumps of gold of a *dróna* in weight, of the sort called *paippilika*, that is to say, ant-gold; which is so denominated because it is exfoliated by *pippilikas*, that is, by the common large ant.’ We have here the expression of a belief which we know to be prior by more than five centuries to the Christian æra, and which, however erroneous, was neither very extravagant nor irrational. This simple and archaic notion, however, was perverted by the credulity of writers and misrepresentations of travellers, until, in the form in which it reached Asia Minor, it had grown into a monstrous and incredible absurdity. The scene in which this ant-gold is found is the same generally as that inferred from the Greek writers, the country between the *Himálaya* and the *Kuen-lun* ranges towards *Tibet*.”—H. H. Wilson, *Notes on the Sabhá Parva of the Mahábhárata*, J.R.A.S. vii. (1843) p. 143.

³ Herodotus, iii. 102; Arrian, quoting Nearchus, *Indica*, xv.; Megasthenes, *Frag.* xxxix.; Strabo, xv. i. 44, 69; Aelian, N.A. 3; Pliny, v. 31, vii. 2, xi. 36, xxxiii. 21; Ctesias, *Ind.* 12, γρόπες; Gildemeister, *De rebus Indicis*, p. 220, quoting the 'Ajáib ul Akhbár—نوع من النمل عظام.

being after all mere human gold-diggers, who comforted themselves in the inclement winter months—during which they worked to the best advantage—by sinking their fragile tents below the surface of the earth.¹ This solution, however ingenious, can scarcely be set against the positive assertion of skins being produced, and live animals being seen, some of them in possession of the King of Persia (Herodotus, iii. 102). While their survival in the flesh is testified to by Prester John in the twelfth century, and the living specimen sent from the Sháh of Persia to Solyman II. in 1559 A.D.²

The next contribution to the advance of coinages in India is derived from the unpromising source of the *Sûtras* of Pāṇini, in which pieces of money in a very complete form are adverted to.³ That nominal terms should appear in the grammar of a people would, at the very least, imply that the object designated had attained extensive social recognition. Without touching the higher ground, as to how soon in a nation's linguistic progress fixed grammatical definitions may become a religious, intellectual, or material need, it cannot but be conceded that if the name and description of a coin find a place among rules for the formation of words, this should afford sufficient evidence to establish that such a simple product of mechanical art must long have passed into the dealings and commercial life of the nation at large, before it could have become incorporated in the conventional speech, and been sanctioned in the teachings of the schools.

Admitting these inferences, it remains to decide upon the date of the great grammarian himself. Prof. Goldstücker conceived that he had obtained most important confirmatory testimony to show that Pāṇini lived before *Buddha Sākya Muni* (B.C. 543).⁴ Singular to say, since my

¹ "At Thok-Jalung the tents of the diggers are always pitched in pits some seven or eight feet below the surface of the ground, so as to keep out the wind. . . . The position in which the Tibetans sleep is a most extraordinary one; they invariably draw their knees close up to their heads, and rest on their knees and elbows, huddling every scrap of clothing they can muster on their backs." The price of the gold, in situ, was about 12 rupees per *tolah*.—Montgomery's Report on the Trans-Himalayan Exploration during 1867, Journ. R. Geog. Soc. 1869, p. 154.

Sir H. Rawlinson, I believe, first suggested the idea of *human ants*, a theory which has lately found an elaborate advocacy in Schiern's "Origine du conte des formis qui déterrent l'or."

² De Thou, History of his Time, xxiv. p. 809; Rawlinson's Herodotus, etc.

³ Professor Goldstücker was so obliging as to examine Pāṇini for references to coins, and to furnish me with the following note on the subject:—"That Pāṇini knew *coined* money is plainly borne out by his *Sûtra*, v. 2, 119, *rûpād dhata* . . . where he says, 'the word *rûpya* is in the sense of "struck" (*dhata*), derived from *rûpa*, "form, shape," with the *taddhita* affix *ya*, here implying possession; when *rûpya* would literally mean "struck (money), having a form." Kātyāyana and Patanjali make no observation on these words, but the *Kāśikā-vṛtti* says that 'form' here means 'the form or shape of a *man* which was struck on it;' and considering that *rûpa*, 'form,' is in this *Sûtra* used without any addition—or emphatically, the ellipsis of *purusha*, 'man'—is perfectly natural and justified. As to the date of the *Kāśikā-vṛtti*, nothing positive is as yet known of it; it is certain, however, that it is much later than the *Mahābhāṣya*; but even

without its interpretation, I hold that no other sense than that put by it on this *Sûtra* could rationally be attributed to it."

⁴ I have not yet been shaken in my acceptance of this date for the initial year of the Buddhist cycle, . . . which I prefer as a mere date point to any other, on account of its early reception and continuous use as the established era in Ceylon.—J. R. A. S. i. n.s. p. 461.

As regards the date and surroundings of Pāṇini and his work, much new light has recently been thrown on the question, which I may conveniently refer to in this place.

"Pāṇini, a writer now generally supposed to have lived in the fourth century B.C. At that time Sanskrit had ceased to be a living language, and was only kept up artificially by being made the vehicle for the education of the upper classes. It would be interesting to know what style of language Pāṇini chose as the standard of his observations. It certainly was not the idiom of the Vedas, as he seldom treats this with his usual accuracy, and only mentions it in order to show its discrepancies from the classical style, or, as he terms it, the language of the world. We believe that long before his own time a scientific and poetical literature had already sprung up, etc."—Prof. Aufrecht, in the Philological Society's Transactions for 1873-4, p. 223.

Mr. John Muir, in an elaborate analysis of a late volume of Prof. Weber's *Indische Studien* (1873), has collected much valuable information on the general subject of Pāṇini and his successors, portions of which I may be permitted to quote in illustration of my text. (I notice as this sheet is passing through the press, Max Müller's review of Dr. Kielhorn's new publication on the cognate question, in the *Academy* of 8th August, 1874,

respected friend endeavoured to fix the epoch of his leading authority by the aid of the accepted date of the *nirvāna* of Buddha, so much of a revolution has taken place in Eastern opinion that we now consider the definite determination of the period of the grammarian of far more importance, for the purposes of Indian history, than the dying moments of a traditional saint. However, accepting any of these sufficiently early periods for the indorsement *in writing* of the passage in question, I am satisfied to leave the limit of the anterior currency of the coins open to free discussion.

The allusions to money in the sacred literature of Sākya Muni are so frequent, in comparison with their rare occurrence in the Vedic writings, as to have led one of our modern inquirers to infer that the Buddhists understood and employed the art of coining long before their Brahman adversaries.¹ A more simple and satisfactory reason may be assigned for the apparent result, in the fact that the Vedas and their supplemental rituals refer to an ideal polytheism, while the Buddhist scriptures are based on the personal biography of a man living in the flesh among the people of India, whose manners and customs are thus incidentally portrayed. So that, on the one hand, while the Vedas proper furnish but few references to money, and Manu confines his notices to the formal letter of the law, though that law brings within its circle even the definition of

p. 156.) "The fourth article (pp. 293-496), of which I propose to give a more detailed account, relates to the Mahābhāṣya of Patanjali, illustrated by the Commentary of Kaiyaṣa, of which a complete (lithographed) edition, edited by two Pandits of the Government College in Benares, was published there in 1872. This work (then unpublished) had been already described in Professor Aufrecht's Catalogue of the Sanskrit MSS. in the Bodleian Library, and in Professor Goldstücker's Pāṇini. The Sūtras or aphorisms of the great Indian grammarian Pāṇini were discussed by Kātyāyana in his Vārtikas. . . Patanjali undertook the double task of controverting Kātyāyana, when he appeared to be wrong, and of criticizing Pāṇini. He also leaves many of the aphorisms without any comment. . . The genuineness of the whole of Patanjali's work itself, as we now have it, is not, as Professor Weber considers, beyond the reach of doubt, as some grounds exist for supposing that the book, after having been mutilated or corrupted, was subsequently reconstructed, and at the same time perhaps received various additions from the pen of the compiler. . . Having premised these and other observations, Professor Weber proceeds to extract from the Mahābhāṣya a variety of particulars which throw light on the age of its author (or, at least, on that of the parts of the work in which these particulars are found), and on the political, religious, social, and literary condition of the contemporary Indians. Thus, illustrations of grammatical rules are given which contain allusions to sieges by a Grecian king, and to sacrifice performed on behalf of an Indian prince, Pushyamitra, which (even if we are to suppose that they are current examples borrowed by the author from his predecessors) at all events show that the writer who employs them was posterior to the historical events and persons referred to. These references, however, do not enable Professor Weber to fix Patanjali's date more precisely than by placing it somewhere between B.C. 160 and A.D. 60, though a different conclusion is deduced from them by others. . . Prof. Weber also finds in the book clear allusions to Buddhism; to a treatise on the Lokāyata or materialistic philosophy (while in one of the aphorisms of Pāṇini himself mention is already made of atheists and

fatalists); to the Brahmanical deities of the Epic period, Śiva, Viṣṇu, etc.; to images of the gods; to Vāsudeva or Kṛiṣṇa as a god or demigod, and to his having slain Kansa and bound Bali,—events which were represented in pictures and on the stage, and celebrated by bards; to the seven dvīpas, or continents of the earth, to the limits of Āryāvarta (the most holy portion of India), and to various other geographical details; to provincial differences of language, and indications of the supersession of Sanskrit by Prākṛit; and to the preceding grammatical literature, both antecedent and subsequent to Pāṇini. . . Writing is referred to as practised by Brahmins. Then, as now, the Veda was read by many without being understood. In one place the word *ātman*, or self, is clearly stated (though this was recognized before) to have a double sense—that of body as well as soul. Various allusions are also found relating to social life and morality, to amusements, literature, and dramatic exhibitions. The dissertation of which an account has just been given, forms a sequel to two former articles by Professor Weber, one in the first volume of the *Indische Studien*, headed 'Sketches from the Age of Pāṇini,' in which the author seeks to derive from the references which that writer's aphorisms contain an idea of the extent of the literature which existed in his time. The second article is one in the fifth volume of the *Indische Studien*, which treats of the age of Pāṇini, and Professor Goldstücker's views on that and other subjects, of which it contains an elaborate review. Professor Goldstücker assigns a high antiquity to Pāṇini, placing him before Buddha; and as he accepts the year 543 B.C. as the date of the death of the latter, if we assume that the sage's labours extended over a period of forty-eight years, we arrive at the year 591 B.C. as the time when he came forward as a teacher; so that we must place Pāṇini, if he preceded Buddha, as high as the seventh century B.C. This view Professor Weber contests, holding that it is proved by various allusions to Buddhist practices, which he adduces from Pāṇini, and by other considerations, that the great grammarian lived after the establishment of Buddhism."

¹ Spence Hardy, *Eastern Monachism*, London, 1850, p. 66.

the lowest rate of wages, which is fixed at one *pana* a day, with an allowance of grain, etc. (vii. 126); the Buddhist legends, on the other hand, abound in illustrations of every-day life, including commercial dealings, charitable donations and distributions, and in one instance they have preserved a record of the quaint item, that the Anonyma of her day, in the ancient city of Mathurá, estimated her favours at 500 *purāṇas* (about £16). Burnouf, who cites this anecdote, has further collected in his "Introduction à l'Histoire de Bouddhisme," numerous passages mentioning *surāṇas*, *purāṇas*, *kakini* (ratis), and *kārshāṇas*,¹ and among other things he reproduces a tale which exemplifies the curious custom of the women of the period being in the habit of ornamenting the skirts of their garments with *kārshāṇas*.² The notice of *dinārs*³ has already been referred to. But the most important passage under the numismatic aspect in the Buddhist literature is to be found in the text of the "Mahāwanso," where it is stated that the Bráhmaṇ Chánakya, the adviser of Chandra Gupta, "with the view of raising resources, converted (by re-coining) each *kahāṇa* into eight, and amassed eighty *kotis* of *kahāṇas*."⁴ If the Buddhist legends are to be taken as in any way correct exponents of the state of civilization at the period to which they professedly refer, it is clear that the act of re-coining, and by conversion and depreciation making each *kārshāṇa* into eight, would imply unconditionally not only that the art of coining had reached its most advanced stage, but that the ideas and customs of the country had been already trained by long usage to identify the regal stamp with the supposed assurance of fixed intrinsic value—a fallacy very early taken advantage of by the ruling powers. For while the primitive currencies which bear no royal impress were endued with, and retain to the present, a remarkable uniformity of weight, and equable fineness of metal, as in the very nature of things it was necessary for them to do, that they might exchange against full measure in return; on the other hand, from the moment true coins in our modern sense make their appearance, irregularity accompanies them, so that in the Indian series, in one of the first completely fashioned mintages, that of the silver Behat type, bearing the name of *Kraṇanda*,⁵ the weights of fully-stamped and well-preserved specimens vary to the extent of from 29 to 38·2 grains.

The Ceylon annals casually illustrate the subdivisions of the *kārshāṇa*, as they may be inferred to have existed under Manu (viii. 404), in the descending scale as 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$. The *Bhikkhus* of "Wesáli" (*Bassahr*, north of Patna), asking alms, in 443 B.C., exclaim, "Beloved! bestow on the priesthood either a *kahāṇa*, or half, or a quarter of one, or even the value of a *māsa*."⁶ Without

¹ Pp. 91, 102, 3, 146, 7, 236, 238, 243, 245, 258, n. 329, n. 597.

² I think that instead of "skirts" we should understand the chain-armour-like girdles of gold pieces worn over the fine muslin garments, of which we have so many examples in the Buddhist sculptures, notably shown in the colossal figure of the Mathurá female given in pl. xi. a, in Gen. Cunningham's Arch. Report, vol. iii. The Art-treatment which indicated the gauze-like texture of muslin dresses may be seen in the mere outer edging indicated on the coins of the Indo-Scythians, *Ariana Antiqua*, plates xii. xiii. etc. ³ P. 34, *ante*.

⁴ Turnour's *Mahāwanso*, Ceylon, 1837, p. xl.; and Max Müller's *Sanskrit Literature*, p. 289. The Ceylon writers wrote according to their own lights, as unlike the people of India Proper, who

seem to have reserved the term *kārshāṇa* for the copper coinage. The inhabitants of Ceylon and the western coasts appear to have coined both gold and silver into *kārshāṇas*, *māshas*, and other established *weights*, though the generic term *kārshāṇa* in books and inscriptions usually indicates *copper* coin in the absence of any specification to the contrary.

⁵ Prinsep's *Essays*, i. p. 203, pl. xi. fig. 16; vol. ii. pl. xlv. figs. 2, 3, 4; *Ariana Antiqua*, p. 415, pl. xv. fig. 23.

⁶ *Mahāwanso*, J.A.S. Bengal, vi. p. 729. Prof. Childers has pointed out the following additional passages from the *Mahāwanso*, p. 157:—"The king, desirous of rewarding Phussadeva, who had saved his life in battle, sent for Phussadeva's arrow, and holding it perpendicularly with the point resting on the floor,

insisting upon this last, which would constitute $\frac{1}{16}$ of the *kārshāpaṇa*, I may notice once again the permanency of Indian institutions in the fact that Akbar's *copper*¹ coins were retained under the original and simple division of 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, in the presence of, and association with, the most curious complications of home and foreign introduction into the weights and values of the currency of the precious metals.

There is little else that will immediately serve our purpose in the notices of the Ceylon coins.² Nor do the more promising inscriptions of the Western Caves throw any particular light on the primitive coinages of Northern India. They contain numerous records of donations of *kāhāpaṇas*, and in one place notice a *Kāhāpaṇa Sūla*, or hall for the distribution of *kārshāpaṇas*.³ *Hūns*⁴ and *Paḍikas* are often mentioned, and special respect seems to have been shown to a currency called by the local name of *Nāḍigera*.

After the foregoing evidence of the antiquity of the art of coining in India, it would almost seem superfluous to seek for confirmatory Greek authority for the existence of *coined* money in that country. The classical writers who quote or epitomize the narratives of the earlier eye-witnesses of Alexander's progress, and the more mature inquirers into the home civilization of the land, are profuse in their references to the laws, manners, and customs of the indigenous races; and, without doubt, the absence of a metallic currency would immediately have struck observers, to whom, in their own hemisphere, such a means of commercial exchange had become a fiscal necessity. Hence, in default of any negative assertion,⁵ we might fairly assume a continuous employment of so small a measure of a nation's advancement; but there occur incidentally palpable proofs of the use of

piled *kāhāpaṇas* round it till it was completely covered with the coins, which he then presented to Phussadeva. It appears from Turnour's translation that the *kāhāpaṇas* are expressly said in the commentary to be of gold. The word *kāhāpaṇa* is used very frequently to imply a coin of very little value, as when we say penny, or farthing, e.g. in *Jātaka Nidāna*, *paralokaṃ gacchanti ekaṃ kāhāpaṇaṃ pi gahetvā na gatā*, 'when they went to the other world, they did not take with them even a single *kāhāpaṇa*.'

¹ *Ain-Akbari*, i. p. 36.

² Other references to money are to be found, Mahāwanso, pp. xli. 10; Spence Hardy, *Manual of Buddhism*, pp. 119, 218, 219. Prof. Childers has favoured me with the subjoined curious passage from Minayeff's *Prātimoksha Sūtra*. It is taken from a Commentary on the Vinaya, supposed to have been written by Buddhaghosa in the fifth century A.D. *Rajataṃ nāma kāhāpaṇo lohamāsako dārumāsako jatumsako ye vohāraṃ gacchanti. . . . Tattha kāhāpaṇo ti suvaṇṇamayo vā rūpiyamayo vā pakatiko vā. Lohamāsako ti tambalohādīhi katamāsako. Jatumsako ti lūkkhiya vā niyyāsena vā rūpaṃ samuṭṭhāpetvā katamāsako.* "By rajata is meant the *kāhāpaṇa*, the metal *māsaka*, the wooden *māsaka*, the lacquer *māsaka*, which are in current use. The *kāhāpaṇa* is either that made of gold or made of silver, or the ordinary one, viz. copper. By 'metal *māsaka*' is meant the *māsaka* made of copper and other metals. The lacquer *māsaka* is a *māsaka* made of lac or of resin with a figure (*rūpa*) stamped upon it." Clough, in his *Sinhalese Dict.*, says that the *kahavanuwa* (*kāhāpaṇa*) is "a weight for weighing gold and silver, equal to about 280 grains troy." Among other curious substitutes for money in India, Tavernier mentions the currency in Gujaraṭ of small bitter

almonds, *Biddims*, "which are brought out of Persia," and exchange at from 35 to 40 for the *paisa* (p. 22).

³ Journ. Bombay Branch, Roy. As. Soc. 1853; Dr. Stevenson's Kanheri Caves, Inscription No. x. p. 9, and the revision by Mr. E. W. West in 1862, p. 1, *et seq.*; see also Nāsik Cave Inscriptions, 1853, p. 3; and Sahyādri Inscriptions, 1854, p. 1.

⁴ The mention of *Hūns* thus early is of some value in this inquiry, as showing the age of the name, associated with the near coincidence of its authorized weight with that of the old *purāṇa*. Sir W. Elliot derives the word from *pon*, "gold," Canarese *honna*. The Varāha, or modern Pagoda, being merely a double *honna* of 32 *gunjas* or *ratis*.

⁵ I quote the subjoined statement from Pausanias in order to explain how far it may be accepted as probable. Towards the end of the second century A.D. we know that North India was in possession of an ample currency in the form of Greco-Bactrian and other silver pieces, combined with an unlimited supply of gold and copper from the mints of the Indo-Scythian dynasties. The observation might apply with justice to some of the nations on the south coast, who avowedly dispensed with a coinage till a later period. "But on this road, as I have already observed, the Lacedæmonians have a place which they call Booneta. This was once the house of King Polydorus; and after his death, was bought of his wife for certain oxen; for at that time there was not any coin (*νόμισμα*) either of silver or gold, but according to ancient custom, they mutually gave and received for what they wanted, oxen, slaves, and rude silver and gold. Indeed, even at present, those that sail to the Indies report that Indian rewards are given for the Grecian commodities which are carried thither,

coined money, in its advanced sense, amid the texts of the best authorities, which it may be as well to cite with a view to dispose of obsolete objections, and to preclude their revival.

The first extract refers to Alexander's entry into the capital of Sambus, and the offerings of absolute money and elephants then presented.

Ὡς δὲ ἐπέλαζεν ἤδη τῇ πόλει Ἀλέξανδρος ἡντινα μητρόπολιν εἶχεν ἢ τοῦ Σάμβου χώρα, ὄνομα δὲ ἦν τῇ πόλει Σινδίμανα, αἳ τε πύλαι αὐτῷ ἀνοίγονται προσάγοντι καὶ οἱ οἰκείοι τοῦ Σάμβου τά τε χρήματα ἀπηρίθμησαν καὶ τοὺς ἐλέφαντας μετὰ σφῶν ἄγοντες ἀπήντων· οὐ γὰρ δὴ Ἀλεξάνδρῳ γε πολεμῖως ἔχοντα Σάμβον φυγεῖν, ἀλλὰ Μουσικανοῦ τὴν ἄφεσιν δείσαντα.¹

Postquam vero urbi quæ illius imperii caput est, (Sindimana ei nomen erat) appropinquavit, portæ urbis ei apertæ sunt, quique Sambo familiares ac domestici erant cum numerata pecunia et elephantis occurrerunt, declarantes Sambum non hostili animo in Alexandrum fugisse, sed Musicani dimissi metu.—Arrian Exped. vi. c. 16, sec. 4; French edition, C. Müller, Paris, 1846, p. 163.

The next contribution to the test of the monetary civilization of the Indians, at Taxila, is even more emphatic and distinct in its terms, as embodied in the text of Quintus Curtius.

“Omphis, permittente Alexandro, et regium insigne sumsit, et more gentis suæ nomen, quod patris fuerat, ‘Taxilen’ appellavere populares, sequente nomine imperium in quemcumque transiret. 15. Ergo cum per triduum hospitaliter Alexandrum accepisset, quarto die, et ‘quantum frumenti copiis, quas Hephæstion duxerat, præbitum a se esset’ ostendit, et aureas coronas ipsi amicisque omnibus, præter hæc signati argenti LXXX. talenta dono dedit.”—Q. Curtius, viii. c. xii. 14, 15.²

Such a theoretical stage of advanced development in the local currencies is practically supported by the ready adoption, on the part of the occupying Bactrian Greeks, of so many of the devices and peculiarities of the national coinages. On the one part, Agathocles and Pantaleon, in Arachosia, imitated the square form of piece,³ accepted the current *Indian-Pāli* alphabet of Aśoka, the essential symbol of pre-Aryan civilization,⁴ in some cases to the exclusion of their ethnic Greek, and even adopted a new metal, in the *Nickel*,⁵ which we must suppose to have been indigenous in those

but that the inhabitants are unacquainted with money (*νόμισμα*), though their country abounds with gold and brass.”—Pausanias, iii. xii. 3; translation of T. Taylor, London, 1824, i. 264.

¹ Mr. Roorke, in his translation of Arrian (A.D. 1729), was clear as to “money and elephants.” Mitford, v. 418, seems to have hesitated, and epitomizes the text as “the treasury untouched and not an elephant removed.” Thirlwall, vii. 53, again, is apparently dubious in the words “surrendered his elephants and his treasure.”

The Amsterdam text of 1757, though embodying the word ἀπηρίθμησαν, admitted a possible variant of ἀναρίθμητα. All the later editions seem to accept ἀπηρίθμησαν.—Stereotype German edition, Leipzig, 1824, etc. We may perhaps be now content to receive the simple χρήματα (in v. cap. xx.) of Abissares as “money.”

² To follow out more completely the meaning attached by the author to the term *signatus*, we have only to refer to the parallel passage in an earlier portion of his text. “Summa pecuniæ signatæ fuit talentorum duo millia et sexcenta; facti argenti pondus quingenta æquabat.”—iii. c. xiii. 16. And the contrast in “x millia talentum, argenti non signati forma, sed rudi pondere.”—v. c. ii.

³ Ariana Antiqua, pl. vi. figs. 7, 8, 9; Prinsep's Essays, ii. 179.

⁴ Prinsep's Essays, ii. 35, 40, 42; *anté*, p. 2.

⁵ Cunningham, Num. Chron., viii. (1868), p. 282. and 1873, p. 188; Dr. Flight, *ibid.* viii. p. 305; J.R.A.S. xvii. pp. 72, 77, and iv. n.s. p. 504; Strabo, xv. i. 34; Pliny, 34, 2, and 37, 42.

As this *metallic* inquiry may have an interest for those who do not concern themselves with the historical or geographical bearings of the subject, I annex an outline of certain returns obtained by Dr. Flight. In his account of a piece of Euthydemus he prefaces his analysis by a description of the outward appearance of the metal, which is stated to offer “a bright white colour, with a very faint tinge of yellow; (and) exhibits, when broken, a fine granular fracture, of a dull grey colour, resembling that of cast steel, and has a specific gravity of 8·89.”

The quantitative analysis gave the following result, which is followed up by a comparison with modern continental coin constituents:

Copper	. . . 77·585		<i>Belgian Nickel Currency.</i>	
Nickel	. . . 20·038		Copper	. . . 74·4
Cobalt	. . . 0·544		Nickel	. . . 25·55
Iron	. . . 1·048			
Tin	. . . 0·038			
Silver	. . . trace			
Sulphur	. . . 0·090			
	99·343			99·95

parts.¹ The larger division of the Bactrian Greeks, whose advance took the direction of S.E., in a similar spirit submitted themselves to square sections of metal, incorporated the official alphabet of their new dominions—in this instance the contrasted *Aryan adaptation* of an early form of Phœnician²—which they carried down with them beyond the vanishing point of the Vedic Aryans, without regard to local preferences, into the city of Mathurá,³ which, judging by the *deposited* coins of the later Greek dynasties and the extant remains of the succeeding Indo-Scythians, must have been a place of considerable importance at this period.⁴

My last appeal for written testimony is to the text of *Yājñavalkya*, the advanced authority on Hindú Law, who deals with a period when the Greeks had altogether passed from the Indian stage, and the Kadphises *Yuchi* had been supplanted *inter alia* by their Kanerki successors.

As might be expected, references to specific coins in “Books of Law” are infrequent; but the two verses subjoined open out an unexpected range of inquiry, which may even challenge the date of the author who employs such a term as “*nānaka*.”

“Sec. 240. Whoever falsifies scales, or a royal order (“copper-plate Grants, by the head of the State,” Wilson), or a measure, or a coin (नाणक *nānaka*),⁵ likewise whoever (knowingly) uses them (so falsified), shall be made to pay the highest fine.

“Sec. 241. A trier of coin who pronounces a false one to be genuine, or a genuine one to be false, shall be made to pay the highest fine.”—*Yājñavalkya*, Dr. Roer’s Calcutta edition, p. 67.

To test this passage completely we must admit for the moment the secondary commentary

A postscript is added, regarding later analyses, explaining that a second example of Euthydemus’s money contained “no silver, a trace of tin, much copper, a little iron, a considerable amount of nickel, and a trace of zinc. The second coin, of the reign of Agathocles, was found to be composed of much copper, a little iron, a considerable amount of nickel, a trace of tin, and it contained no silver. All the three coins, therefore, are made of the alloy of copper and nickel.”

¹ Strabo mentions (xv. ii. 10) that tin was found in Drangia; it is possible that *nickel* may have been the white metal referred to. Onesicritus is also quoted as deposing that in Carmania there are mines of silver, copper, and minium, so that there may have been also mines of nickel in that proximate province from which the Arachosian coins were made. An idea has been put forth that these Nickel pieces are all forgeries, but I think numismatists may trust Gen. Cunningham’s perception of true and false coins, even if intractable nickel would not have been the last metal selected for manipulation. I imagine these coins were intended to pass at the same rate as the silver money of identical stamp. As regards value, we have the evidence of Scripture for “fine copper precious as gold” (Ezra viii. 25, 27), and Josephus’s parallel testimony for “copper more precious than gold” (vii. 53, xi. 5). And Strabo bears witness more directly to local values in “drinking cups and lavers of Indian copper, most of which were set with precious stones” (xv. i. 69). Apollonius of Tyana, on his arrival at the Kophen river, observed “that the Indian money was of orichalcum and bronze—purely Indian, and not stamped like the Roman and Median coins.” Mr. Priaulx in a note adds, “the Indian money is *ὑλη κεκομψευμένη*, metal *refined, prepared*; and the Roman *κεχαράγμενη*, *stamped*.”—J.R.A.S. xvii. 72. The *orichalcum* may possibly refer to the *nickel* pieces, the copper to the imperfectly preserved square

pieces the Bactrian Greeks left in such multitudes on these old sites. Mr. Masson remarks, “I suppose that no less than 30,000 coins, probably a much larger number, are found annually on the *dasht* or plain of Beghrām.”—J.A.S. Bengal, 1834, p. 154; Prinsep’s Essays, i. p. 81. See also the passage from Krinagoras quoted by Gen. Cunningham,

Χάλκεον ἀργύρεφ με πανείκελον, Ἰνδικὸν ἔργον.

“Ολπην

—Numismatic Chron. 1873, p. 190; Marco Polo, xiv. and xx.; Kenrich’s Phœnicia, p. 206.

² Prinsep’s Essays, ii. 144; Numismatic Chronicle, iii. n.s. (1863), p. 225; J.R.A.S. Mr. Norris, viii. 303; Prof. Wilson, xii. 153; Prof. Dowson, xx. 1863, p. 221.

³ Arrian Indica, viii., quoting Megasthenes, says, Τοῦτον τὸν Ἡρακλέα μάλιστα πρὸς Σουρασηνῶν γεραίρεσθαι, Ἰνδικοῦ ἔθνεος, ἵνα δύο πόλεις μεγάλαι, Μέθορά τε καὶ Κλεισόβωρα, καὶ ποταμὸς Ἰωβάρης πλωτὸς διαρρέει πῇν χώραν αὐτῶν. The variant of Κρισνόβωρα has been suggested in lieu of Κλεισόβωρα.—C. Müller, p. 318; Pliny, vi. 22, 19; Ptolemy, vii. 1, Μόδουρα ἡ τῶν Θεῶν.

⁴ Gen. Cunningham, J.A.S. Bengal, vii. (1854) p. 681; Archaeological Report for 1871–2, pp. 14, 30; Prinsep’s Essays, ii. 197; Mr. E. C. Bayley and Bábu Rájendra Lál, J.A.S. Bengal, 1870, p. 117; Prof. Dowson, J.R.A.S. vol. v. n.s. p. 182.

⁵ Professor Wilson remarks that the name of नाणक *nānaka* occurs in the play of the *Mrichchhakatī* (act i. scene 1), and the commentary explains the *nānaka* as शिवाङ्कटङ्क *Śivāṅka-tāṅka*, or “coin with the mark of Śiva.”

⁶ A curious instance of the modern village law for the punishment of incompetency in like cases is to be found in my Pathán Kings, p. 344.

quoted below of a "coin with the mark of Śiva." The particular series alluded to clearly belongs to the age of the *Yuchi* Kadphises, whose conjoint gold and copper pieces are constant in their adherence to the reverse device of the god "Śiva" and his special equipage the "Bull Nandi."¹ It is probable that the abundant issues of this type of money in gold secured its overwhelming prevalence amid the ordinary currencies of the country till the accession of another ethnic wave of Scythicism, in the Kanerki Kings, who impart their titles of PAO NANO PAO² to the designation of the *nānakas* named in the text,—a royal designation, which retained so much favour in the land that it continued in use through many mintages, till it fades away on the small silver pieces of Gujarāt, with their scarcely recognizable Greek letters and the revived shadow of the *Śaivik Bull* reverse, which disappears with the coins of Skanda Gupta, on the, at last confessed, rebellion of his vassal *Senāpati* Bhaṭṭaraka,³ and the final extinction of the Gupta race, which constitutes so remarkable a date-point and era in the later annals of the land.⁴

¹ Ariana Antiqua, x. figs. 6, 7, 8, 9, etc.

² Ariana Antiqua, xii. 1, etc. Some curious coincidences are associated with the title of NANO, both with regard to the goddess NANAIA of the Western nations and the *Foue-Chi*, "de race lunaire," the *Chandravansas*, etc. It is possible that the original meaning of PAO NANO PAO may have been "King Moon King," or King of the Lunar Race.—J.R.A.S. xii. 15.

³ Numismatic inquiries are always liable to be discomfited in their assumed results by authentic additions to written or competent traditional history; and I confess that I was startled by the appearance of the subjoined new light lately thrown upon the avowedly obscure annals of the GUPTAS. Their silver coinages on the west coast presented unusual difficulties in the way of any definite classification on the one part, or the explanation of their anomalies on the other; but I am glad to be able to say that *Numismatics* did not betray me on this occasion, and that on the mere typical indications of the coins themselves, and the contrasts they disclosed with the Imperial issues, I felt myself competent to pronounce in 1848 that "it may indeed be a question whether these Saurāshtran silver pieces of Skanda Gupta, with the Bull reverse and other types of the ample Skanda Gupta coinage, did not constitute the bulk of the entire currency under, if many of them were not actually struck by, the earlier members of the Valabhi dynasty, while acting as *local* sovereigns, on behalf of the Gupta suzerain."—J.R.A.S. vol. xii. p. 9. (See also p. 66, and Prinsep's Essays, ii. p. 98.)

Major Watson's recent additions to our power of unravelling the tangled web of this section of Indian history are given in his own words, and, as I have intimated, if the coins were not prophetic, the interpreter must have been in fault. We now see that the treacherous *Senāpati* retained his suzerain's name to the last, but associated it with the special symbol or device of his own family, which subsequently figures prominently on the public documents of the new dynasty. On some of the later and more degraded types of the western silver money (Journ. Royal As. Soc. xii. pl. ii. figs. 35-38) I imagine I can read

श्री भट्टरकस रज्जो मह चक्रपस

Srī Bhaṭṭarakasa rajno maha Kshatrapasa.

The obverses of these coins bear a rough imitation of the profile and flat *Kausia* of the Sāh Kings. The reverse device, though debased almost past recognition, retains palpable traces of a reproduction of the Minerva Promachos of Menander's Hemi-

drachmas, which were once so largely current at Baroach (Vincent's Periplus, ii. 401).

"The bards relate that Vāḷā Rājā, son of Vāḷā Warsingji, reigned in Junāgaḍh and Vanthali. . . . Rāma Rājā was of the Vāḷā race. It is said in Saurāshtra that previous to the rise of the kingdom of Junāgaḍh-Vanthali, Valabhinagar was the capital of Gujarāt. The rise of Valabhi is thus told by the bards. 'The Gupta kings reigned between the Ganges and Jamnā rivers. One of these kings sent his son Kumāra pāl Gupta to conquer Saurāshtra, and placed his viceroy Chakrapāni, son of Prāndat, one of his Amīrs, to reign as provincial Governor in the city of Wāmanasthali (the modern Wanthali). Kumāra pāl now returned to his father's kingdom. His father reigned 23 years after the conquest of Saurāshtra and then died, and Kumāra pāla ascended the throne. Kumāra pāl Gupta reigned 20 years and then died, and was succeeded by Skanda Gupta, but this king was of weak intellect. His *Senāpati*, Bhaṭṭaraka, who was of the Gehloti race, taking a strong army, came into Saurāshtra, and made his rule firm there. Two years after this Skanda Gupta died. The *Senāpati* now assumed the title of King of Saurāshtra, and, having placed a governor at Wāmanasthali, founded the city of Valabhinagar. At this time the Gupta race were dethroned by foreign invaders.'"—Major J. W. Watson, *Legends of Junāgaḍh*, *Indian Antiquary*, Nov. 1873, p. 312.

⁴ This date of 319 A.D. for the extermination of the Guptas and the rise of the Valabhis was first obtained from the Arabic MS. of Abū Rihān Al-Bīrūnī, who followed up his inquiries into the history and antiquities of India, when present in person in that country in A.D. 1032, in the suite of Mahmūd of Ghaznī. The Valabhi initial epoch thus defined was at once seen to be corroborated by the extant Patan Somnāth Inscription, which gives its own date in the corresponding eras of Vikramāditya 1320, Hijrah 662, and Valabhi 946. The Guptas themselves seem to have followed the Saka era (59 A.D.) in their computations, as we have two Inscriptions of Chandra Gupta I. dated severally *San* 82 and *San* 93, which would fitly correspond with our new information, and place his reign in 161-172 A.D. Major Watson's traditionary evidence goes to show that we may work upwards from the authorized starting-point of A.D. 319 by some 50 years at least, if not much more, for the domination of the fifth, sixth, and seventh kings of the Gupta family, whose

There are some contrasts between these two prominent series of Indo-Scythic coins which it is necessary to notice. The special gold *nānakas* do not employ the Hindú figure of Śiva on the reverse, but the general range of their devices and those of the parallel copper coinage indicate the free and liberal acceptance of the types of endless varieties of discordant creeds, the leading items of which I have attempted to indicate in a late paper on the Indo-Sassanian point of contact with the local coinages on the western borders of Afghánistán.¹ The Kadphises Scythians make use of the Bactrian alphabet in the counterpart legend, following the leading Greek superscription, as had been the recognized custom of the Greeks themselves. The Kanerki horde restrict the epigraphs on their mintages to Greek legends alone; though their subjects, as will be seen from the Inscriptions collected below, still retained in the localities into which it had penetrated the Bactrian character founded on Phœnician models; while the dwellers in the Eastern districts preferred the indigenous *Pāli*, of which Aśoka's Inscriptions afford us the earliest extant type.

INDO-SCYTHIAN INSCRIPTIONS.

In the Indo-Pāli Alphabet.

Mathurá.—KANISHKA.	Mahārāja Kanishka.	Samvat 9.	.
HUVISHKA.	Mahārāja DEVAPUTRA Huvishka.	S. 39.	
	Mahārāja RĀJĀTIRĀJA DEVAPUTRA Huvishka.	S. 47.	
	Mahārāja Huvishka.	S. 48.	
VĀSUDEVA.	Mahārāja Rājātīrāja DEVAPUTRA Vāsu(đeva).	S. 44.	
	Mahārāja Vāsudeva.	S. 83.	
	Mahārāja Rājātīrāja, SHĀHI, Vāsudeva.	S. 87.	
	Vāsudeva.	S. 98. ²	

reigns are vaguely measured by oral report, and by allowing Samudra Gupta, the fourth on the list, a comparatively lengthened reign, and placing the year 82 at an early period after the accession of Chandra Gupta I., we may get something like a reasonable approximation for the rise of the family towards the middle of the second century A.D. This would give a long average, it is true, for the seven reigns, of twenty-four years each (318—150=168), including Śrī Gupta, the founder of the house, who, although his own successors deny to him the more exalted titles they assume for themselves, both effectively reigned and struck coin (Prinsep's Essays, ii. p. 94). The average of twenty-four years to a reign is by no means an excessive estimate in Indian annals (J.R.A.S. xii. p. 36), even if we were sure that we had the full and continuous succession, without breaks or omissions, in the subjoined list which has been preserved in the contemporaneous inscription on the Bhitari Lāt (J.A.S. Bengal, vi. 1 and 969).

- | | |
|---------------------|----------------------|
| 1. Gupta. | 5. Chandra Gupta II. |
| 2. Ghatot Kacha. | 6. Kumāra Gupta. |
| 3. Chandra Gupta I. | 7. Skanda Gupta. |
| 4. Samudra Gupta. | |

There is ample evidence to support Al-Bīrūnī's statement that the era of the Guptas was "the era of their extermination," inasmuch as we have inscriptions dated 141 years after the repose of Skanda Gupta (Prinsep's Essays, i. p. 250), and one on the Morbi Grant of 903 A.D., which still refers to the close of the Gupta rule in the terms, "585 years of the Guptas having elapsed" (Indian Antiquary, September, 1873, p. 258. See also J.A.S.B.

xxx. p. 7, and xxxii. p. 429). I have from the first contended that the early Valabhis did not make use of their own dynastic date, but employed the ordinary Saka Kāla (J.R.A.S. xii. 5, n.), and I have little doubt but that when we come to compare and determine the *true* dates on their land-grants and other public records, we shall be able to reconstruct a satisfactory list of the regal successions. I complete this note by the quotation of the more important passages of Al-Bīrūnī's work, the "Tārīkh-i-Hind," which has been partially translated by M. Reinaud in his *Fragments Arabes*, etc. (Paris, 1845), and of which a full English version is now in course of preparation, for the Oriental Translation Fund, by Dr. Sachau, of Vienna. "On emploie ordinairement les ères de Śrī Harsha, de Vikramaditya, de Saka, de Ballabha et des Guptas. . . . L'ère de Saka, nommée par les Indiens Sakakāla, est postérieure à celle de Vikramaditya de 135 ans. . . . Ballabha, qui a donné aussi son nom à une ère, était prince de la ville de Ballabha, au midi de Anhalwara, à environ trente yodjanas de distance. L'ère de Ballabha est postérieure à celle de Saka de 241 ans. . . . Quant au Gupta Kāla [ère des Guptas], on entend par le mot *Gupta* des gens qui, dit on, étaient méchants et puissants; et l'ère qui porte leur nom est l'époque de leur extermination. Apparemment, Ballabha suivit immédiatement les Guptas; car l'ère des Guptas commence aussi l'an 241 de l'ère de Saka."

¹ Numismatic Chronicle, 1872, pp. 119, 271.

² Journal of the Royal Asiatic Society, vol. v. n.s. p. 182, Professor Dowson. Archaeological Report, vol. iii. p. 29, General Cunningham.

In the Bactrian-Páli Alphabet.

Other localities.—Baháwalpúr.

Maharaja Rajadiraja DEVAPUTRA *Kanishka.*

Samvat 11, on the 28th of the (Greek) month of Dæsius.¹

Manikyála Tope. *Maharaja Kaneshka*, GUSHANA *vaśa samvardhaka.*

“Increaser of the dominion of the Gushans” (Kushans). S. 18.²

Wardak Vase. *Maharaja rajatiraja Huveshka.* S. 51, 15th of Artemisius.³

In addition to these Bactrian-Páli inscriptions, we have a record of a king called Moga (Moa?), on a copper plate from Taxila, wherein the *Satrap Liako Kusuluko* (Kozola?) speaks of the 78th year of the “great king, the great *Moga*,” on the 5th of the month of Panæmus.⁴

The geographical distribution of the Inscriptions given above provides us with a safe guide towards tracing the extent and direction of the spread of the Semitic characters which the Aryans brought down with them in their passage into India. Its use in Northern India is further determined by its appearance in conjunction with the local alphabet on the coins of Behat,⁵ and in its association with the Greek on the hemidrachmas of Strato and his successors, which there is reason to attribute to a mint at or proximate to Mathurá.⁶ On the other side of the continent, below Baháwalpúr, whose Inscription attests its march in that direction, faint traces of its progress down the Indus may be discovered in the *quasi*-Sauráshtran issues of *Chastana*, where it appears in combination with the finished Páli alphabet of the province of Gujarát.⁷

As a preliminary to the consideration of the Indo-Semitic adaptation of phonetic definitions, it is necessary to examine the characteristics of the indigenous alphabet of India, and to define its geographical limits. This character under its lapidary form is presented to us for the first time when Aśoka, in about B.C. 250, originated the practice of recording his edicts, as manifestos to the many nations who acknowledged his sway, on rocks and pillars. It is here seen to have reached a considerable degree of maturation, such as would forbid any supposition that it was newly devised or in any way constituted the crude prototype of its class. This alphabet, or parallel derivatives from a common stock, covers a superficial area extending from Arachosia to Annam on the one part; and it is found, in the earliest form of which we have knowledge, concurrent in Ceylon, and employed, as in India, in lapidary epigraphy by the first missionaries and converts to Buddhism in that island. As far as can be ascertained from the various styles of writing into which the generic archetype was made to diverge, their peculiarities seem to have been more distinctly due to the different materials used for writing⁸ than to any defined idea of departing from the old models. The divergences, it is

¹ J.A.S. Bengal, 1870, p. 69, Mr. Bayley; J.R.A.S. iv. n.s. 1870, p. 500, Prof. Dowson, and v. n.s. 1871, pl. 4, p. 196.

² J.R.A.S. xx. 1863, p. 251, Prof. Dowson. Prinsep's Essays, i. p. 145.

³ Ariana Antiqua, 117; J.R.A.S. xx. 259; Prinsep's Essays, i. p. 163, pl. x.; J.A.S. Bengal, 1861, p. 337, Rájendralála Mitra.

⁴ J.R.A.S. xx. p. 227, and J.A.S. Bengal, 1863, pp. 130, 301, 421. Prinsep's Essays, ii. 85, 87, 202, 223. The exact site of the discovery of this plate is stated by Mr. Delmerick to have been a place still called *Topi*, after its own ancient tumulus, about two miles N.E. of the ruins of Koṭ Atial. The same officer adds that

the name of the Satrap *Liak* is still common among the Hindús of that part of the country.—J.A.S. Bengal, 1870, p. 90.

⁵ Prinsep's Essays, pl. iv. fig. 1, etc.; J.A.S.B. 1834, p. 221.

⁶ Prinsep's Essays, ii. p. 197; J.A.S.B. 1854, p. 681.

⁷ Journ. Bombay Branch Royal Asiatic Society, 1867, and viii. 234, 243.

⁸ Wheeler, in his “Rámáyana,” page 32, thus describes “how Ráma learnt his alphabet:”—“The preceptor, Vasishtha, then took a chalk stone, and drew the vowels upon the floor, and directed the boys to run over each letter three times . . . ; (going to school) each (boy) carried his ink bottle in his right hand, and over his left shoulder was his satchel containing books, reeds, and

true, are marked and startling at first sight; but, on a closer examination, no one can contest James Prinsep's emphatic verdict, that they all betray a common parentage.

The most important point in the present inquiry is the Arachosian ethnic continuity and community of alphabets—a discovery Prinsep would specially have rejoiced in, had the available data then justified any such unexpected suggestion. This association is now established by evidence from various independent sources:—The use of the Indian Páli or inscription letters on the coins of the Greek kings, Agathocles and Pantaleon, who first penetrated into those parts, and confessedly held Arachosia, coupled with the fact that no other Bactrian Greek ever employed this character on their metropolitan or provincial coinages. Next we have the traditional *Γάνδαραι Ἰνδῶν ἔθνος*,¹ and Dr. Caldwell's discovery of the Túránian language beyond the Indus, in the identities of Brahui and Drávidian speech; while the connexion of these severed branches with the language of the Scythic Inscription of Darius at Behistún² brings us back into *rapport* with the dominant Túránianism of the prehistoric world.

The Indian Páli alphabet itself, though stiff and formal, as becomes a lapidary character,³ is simple and well devised in its normal outlines, though its aspirates and seemingly later additions are not so systematically designed.⁴ At the time when it is first met with in Aśoka's edicts, it is found to be deficient in certain letters necessary for the due expression of Sanskrit,⁵ and possessing, on the other hand, a class of consonants requisite in its own system, but useless for the definition of Aryan languages. Its vocalic scheme was full and consistent, especially in the configuration of the long and short *e*, *é*, and *o*, *ó*, which in the later Sanskrit adaptations were transformed into the inconsecutive sounds of *e*, *ai*, and *o*, *au*. I do not wish to make too great a demand upon the subdued confidence of the representatives of ancient Drávidian literary progress; but when I find

white palm leaves. . . And when they knew all the vowels, they were taught all the other letters of the alphabet."

The commencement of the education of Buddha is thus related in the "Lalita-Vistara":—"The Bodhisatva took a leaf to write on (*lipiphalaka*) made of sandal-wood. He then asked Viśvámitra what writing he was going to teach him. Here follow 64 names, apparently the names of alphabets. . . The alphabet which he learns is the common Sanskrit alphabet, with the omission of the letters *l*, *ri*, and *ri*. It consists of 45 letters."—Max Müller, *Sanskrit Literature*, p. 518.

¹ Hecataeus, Fr. 178, 179; Herodotus, iii. 91, viii. 66; Arrian *Indica*, caps. i. iv.; Strabo, xv. i. 11, 25, 30; ii. 9; Pliny, vi. 23; H. H. Wilson, *Asiatic Researches*, xv. 103, and *Ariana Antiqua*, p. 131. There is a curious notice in Mas'audi about the "Kúch, Belúch, and Jats inhabiting Kermán" (i. p. 254, Paris edit.).

² Norris, "The Behistún Inscription of Darius," *J.R.A.S.* xv. pp. 97, 142. "Gandara or Parupamisana," Oppert, *Journal Asiatique*, 1854, p. 144; *Indian Antiquary*, 1872, p. 23. In Pāṇini, Sankala stands at the head of the group Sankalādi, the second name in which is Pushkala, the ancient capital of Gāndhāra, and the Peukulas of the European geographers.

³ THE INDIAN PÁLI OR LĀṬ ALPHABET.

Consonants.

† k	ᳵ kh	^ g	᳚ gh	□ ñ
᳚ ch	᳚ chh	ξ j	᳚ jh	᳚ ñ
᳚ t	᳚ th	᳚ d	᳚ dh	᳚ n
^ t	᳚ th	᳚ d	᳚ dh	᳚ n
᳚ p	᳚ ph	□ b	᳚ bh	᳚ m
᳚ y	r	᳚ l	᳚ v	᳚ h
᳚ s				

Initial Vowels.

᳚ a ᳚ á : i ᳚ u ᳚ ú ᳚ e ᳚ é ᳚ o

Medial Vowels.

† ka, † ká, † ki, † kī, † ku, † kú, † ke, † ké, † ko.

⁴ *Journ. As. Soc. Bengal*, "Proceedings," February 5, 1867; *J.R.A.S.* vol. v. n.s. p. 422.

⁵ ᳚ ᳚ and ᳚ sh, ᳚ ksh, ᳚ ri, ᳚ rī, ᳚ lri, ᳚ lri, and the Vedic ᳚ tr.

Dr. Caldwell arranging the Tamil suite of vowels as *a, á; i, í; u, ú; e, é; o, ó*, and simultaneously see one of our best exponents of Mongol and Chinese palæography reproducing the same sounds of *a, á; e, é; i, í; u, ú; o, ó*, from the Báshpah alphabet at Peking and Nankow,¹ I am inclined to think that there must be more in the Túránianism of sounds than some modern critics are prepared to admit. It is a high compliment to the archaic alphabet of Aśoka that its letters, but slightly modified to suit the Chinese taste, should have been elected to the honour of superseding all less perfect systems of writing that curious nation was able to admit to competitive examination in the reign of Kublai (A.D. 1269).

BÁSHPAH ALPHABET PRESERVED ON A PALL IN THE LAMASARY OF YUNG-HO-KUNG IN PERING.

om a á e é i í u ú o ó k kh ng ch ch' gn t th n p ph m y r l b bh s h y
i í e é u ú o ó ah áh
t th d dh v j s ya g ds ds' w sh h' b ri ri li li kr
kh z k jh jhn f d b gri gr kk ks kl qhu bangt

[The italic letters are Mr. Wylie's. I have added some suggestive identifications of the optional variants in Roman type.]

The alphabet, as we here find it, retains far more of the primary outlines than the Tibetan, which was stereotyped and rendered constant in the forms of its letters by its use, engraved on wood blocks for printing purposes, during the seventh century of our era,—so that we must refer the passage of Aśoka's *lāt* character through the gorges of the Himálaya to a very early age, and its survival as the fittest constitutes at least a lasting tribute to the inventive powers of the natives of India. The conclusions of the leading scholars of the day regarding the unacknowledged appropriation by the Sanskrit grammarians of the Drávidian *cerebrals* have been quoted in full at p. 21.

I may here advert, parenthetically, in connexion with this early reception of the literal forms of India by the Asiatic races dwelling to the northward and eastward, to the apparently parallel transfer of so much of the leading spirit of the Proto-Buddhism of Aśoka's edicts and its incorporation into the Chinese ritual of that creed, that we find the first commandment of the latter

¹ Mr. Wylie prefaces his remarks upon this curious document, which I suppose to have been one of the standard key copies of the variants of the official alphabet, preserved for reference in the interpretation of inscriptions and other manifestos. "The inscription on the arch of the Pagoda, five miles to the north of the Nankow Pass, on the great wall of China, is engraved in the characters of six different nations. . . Two of the parts are inscribed in horizontal lines at the top, in antique Devanágari [*i.e.* Báshpah] and Tibetan characters respectively, twenty feet long on each wall. Below these are four compartments inscribed respectively in Mongol, Ouigour, Neuchih, and Chinese characters, all in vertical lines. . . When on a visit to the great lamasary *Yung-ho-kung*, in Peking, I observed in one of the temples a pall inscribed in the common Tibetan character, with a horizontal heading in a character which was unknown to me. I thought it of sufficient interest to take a copy of it [reproduced above]. I conclude, from examination, that it is simply the alphabet, and I have identified the greater number of the letters with tolerable probability."—J.R.A.S. v. n.s. p. 27.

The imperial decree of Kublai in A.D. 1296 goes on to declare:—

"Maintenant la culture des lettres fait chaque jour de nouveaux progrès; mais les caractères d'écriture, qui n'étaient pas assortis aux lois constitutives du génie de la nation, ne peuvent réellement plus lui suffire. C'est pour ce motif seulement qu'il a été ordonné au précepteur du royaume, Pa'-sse-pa, de former de nouveaux caractères mongols avec lesquels on pût transcrire d'autres langues et reproduire en général toutes les compositions littéraires. Ces caractères ont pour but, en déterminant fidèlement les paroles, de faire pénétrer partout la connaissance des faits; et, à dater d'aujourd'hui, à l'avenir, toutes les fois qu'il sera publié des documents revêtus d'un cachet officiel, on ne se servira plus, dans tous ces documents, que des nouveaux caractères mongols." . . . "On fait observer ici que . . . les règles de formation des caractères mongols n'étaient absolument qu'une transformation du *devanágari* de l'Inde."—M. Pauthier, in the *Journal Asiatique*, 1862, page 14. See also *Journal Asiatique*, 1860, page 327.

phrased, "From the meanest insect up to man, thou shalt kill no animal whatever!" while the first sin is denounced as "the killing of animals."¹ The opening passage of Aśoka's "edict of religion" (*Dhammalipi*) declares "the putting to death of anything whatever that hath life . . . shall not be done."²

The coincidence may merely imply that this was the true germ of Buddhism; indeed, no one can fail to remark the change which came over the later developments of that faith in India—a contrast which induced Professor Wilson to maintain for a long time that the edicts of "Piyadasi, the beloved of the gods," were not the utterances of the Maurya Aśoka, and that their purport had but dubious identity with Buddhism.³

The continuity and exclusive domain of the *Indo-Pāli* alphabet, which under Aśoka was accepted and acknowledged in his Inscription at Khalsi, on the Upper Jumna, and retained undisturbed at Gīrnār in Gujarāt, and over all the rest of India, is first broken in upon by Aśoka's own counterpart Inscription at Kapurdigiri, on a branch of the Kophes or Kābul river, in the Peshāwar valley, which is embodied in Bactrian *Semitic* characters, and presents the further peculiarity of disclosing a larger Sanskrit element in its language than the contemporaneous Southern texts. With the exceptions previously noticed, all the Greek Princes of Bactria employed this latter alphabet on the reverses of their coins, in conjunction with their own proper Greek epigraphs on the obverse face; and it was this combination of names and titles which, in the first instance, encouraged Prinsep and Lassen to investigate the nature of the alphabet itself, and to lay the foundations of a decipherment largely advanced by Mr. Norris's and Professor Wilson's⁴ collation and comparison of the joint texts of Aśoka's bilateral Inscriptions; which have since been tested, and the subject fairly exhausted, by Professor Dowson's critical examination of all the available materials, aided by the opportune accession of the Taxila Inscription of the Satrap *Liak*,⁵ which, in its amplified combinations and definitions of letters, afforded an insight into many hitherto obscure points in this system of palæography. General Cunningham and myself have each to claim a minor share in these conclusive results, he as having worked with Prinsep in his best days, while upon me devolved the duty of editing the posthumous Essays of our common teacher.⁶ In that publication, I was able to demonstrate beyond doubt the Phœnician origin of the Bactrian alphabet, and to discriminate the adapted forms of forty-one letters already evolved out of the twenty-two signs which completed the original alphabet of the West. I was further enabled to follow out the transformations of the forms of the characters incident to their transfer from a non-vocalic scheme of writing to the supremely exacting demand for that class of letters in the Sanskrit tongue, and, in the process, to trace the curious effect of the insertion of the newly devised vowels in the body of the normal Semitic letters, which so strangely altered their primary configuration and identity.⁷

¹ Gutzlaff, *China Opened*, ii. 216. London, 1838.

² This is James Prinsep's version. Prof. Wilson has: "The putting to death of animals is to be entirely discontinued."—J.R.A.S. xii. 164. The Ceylon Buddhists, who so early took to relic worship, and superseded the old *Sanga* or "Assembly" by their own dominant Hierarchy, still retain, as the first of the ten precepts, "Abstinence from destroying life."—J.R.A.S. vii. n.s. p. 8. See also Prinsep's Essays, i. 16.

³ J.R.A.S. xii. 249., and xvii. 357. See also my edition of Prinsep's Essays, ii. 36.

⁴ J.R.A.S. xii. p. 153.

⁵ J.R.A.S. xx. p. 221.

⁶ Essays on Indian Antiquities of the late James Prinsep, F.R.S. John Murray, London, 1858.

⁷ Prinsep's Essays, ii. p. 144. See also my later article in the Numismatic Chronicle, on "The Bactrian Alphabet," December, 1863, p. 225.

And this opens out the larger inquiry, as to how far Pāṇini, with this alphabet alone at his command, could have pretended to fix and define the laws of Sanskrit *sandhi* out of a scheme of letters avowedly deficient, even in its most advanced stage, of a full series of discriminative long and short vowels, and inherently opposed to every mechanical facility of combination of consonants.¹

If the great grammarian "rejoiced in the economizing of half a short vowel,"² he must have been sorely tried if restricted to the employment of an alphabet which was incapable of giving expression to anything but a simple *i*, *u*, *e*, *o*,³ though it had acquired the faculty of defining a long *ā*, by the addition of a dot outside the recognized configuration of that vowel.

As he himself refers vaguely to *Yaranāni-lipi*, we must conclude that he did not habitually use this style of writing, but wisely took advantage of the more perfect alphabet of the continent at large, still uneradicated at Taxila, with its complete system of long and short vowels, and the unlimited though only partially developed power of conjunction of consonants, above or below the line of writing, without the loss of a definitive fragment of either letter. How much this exotic Phœnico-Aryan alphabet owed to its Indian domestication may be seen in the contrast presented between the simple letters of Aśoka's Kapurdigiri edict, dating about 250 B.C., and the advanced development of compound consonants in this officially patronized character, exhibited in the Taxila copper-plate inscription of the King Moa, who may roughly be said to date some two centuries later. However, official recognition and centuries of use in public documents could not save this most inconvenient and unsuitable alphabet from extinction before the superior merits of the Indian Pāli; and though it lingered in its ancient home on the Kābul river, as the chosen character of the Buddhist faith in those parts,⁴ all trace of it is speedily lost; so that when the Sassanian influence first penetrated into Afghānistān, we find the square letters of the Devanāgarī alphabet in full acceptance, a position freely extended to them in their conjoint employment with the Pehlvi of Persia⁵ and the as yet undeciphered type of Scythic,⁶ while their final triumph is marked by their exclusive adoption by the Brahmanical dynasty of Syala and Samanta Deva.⁷

¹ "The observations I am going to make may tend to show that there is much more evidence in Pāṇini than this solitary word (*lipikara*) for the assumption that he was not merely conversant with writing, but that his grammar could not even have been composed as it is now, without the application to it of written letters and signs."—Goldstücker, Preface to the *Mānava-Kalpa-Sūtra*, p. 17. London, 1861. "Pāṇini's object is to record such phenomena of the language as are of interest from a grammatical point of view. Sometimes the words which belong to his province will be at the same time also of historical and antiquarian interest; but it does not follow at all, that because a word of the latter category is omitted in his rules, it is absent from the language also."—p. 18.

² "The matter thus to be inculcated must have been written in such a manner that an author rejoiceth in the economizing of half a short vowel as much as in the birth of a son."—p. 25.

³ When Pāṇini speaks of two *varṇas*, *yi*, *i.e.* of a *varṇa* *y* and a *varṇa* *i*, we must conclude that *varṇa* did not apply to the

spoken sound, but to the written sign, since the value of *y* without a vowel would be unpronounceable." . . . "*Varṇa* is used by Kātyāyana and Patanjali in the same manner as in Pāṇini's *Sūtra*, which speaks of the *varṇa* *y*, viz. of unutterable consonantal sounds, which therefore must have been written signs."—p. 39. See also pp. 50, 52, 53, 57, 59, etc.

⁴ All these medial vowel signs were either imitated or indirectly derived from the system of definition already in use in the *lāt* alphabet.—Prinsep's *Essays*, ii. pp. 146, 160.

⁵ Masson's *Discoveries in the Topes, etc., Ariana Antiqua*, pp. 55, 84, 111, 114, 118, pl. iii. fig. 11.

⁶ Prinsep's *Essays*, ii. p. 107; *J.R.A.S.* xii. p. 342.

⁷ *J.R.A.S.* xii. p. 332.

⁸ *J.R.A.S.* ix. p. 177; Prinsep's *Essays*, i. p. 299, pl. xxv. Pathān Kings of Delhi, p. 57. Re naud, "Fragments Arabes," quoting Al-Bīrdī. *Journal Asiatique*, September, 1844, p. 295. See also the same writer, *Mémoire sur l'Inde*. Paris, 1849, p. 210.

CHAPTER III.

COINS, *PROPER*, AS DISTINGUISHED FROM BULLION.

THE growth and development of the normal Indian weights into square pieces of metal, which constituted alike measures of weight and measures of value, mark the *fons et origo* from which numismatists must trace the parallel progress of the art of coining in coincidence with the maturing civilization of the nation at large. Any attempt at a comprehensive treatment of the subject would be futile, if the data depended solely upon legendary testimony—Túránian or Aryan, Buddhist or Brahmanical; but, fortunately, the sequence of tentative and periodic mechanical adaptations coincides in a remarkable degree with the sifted evidence contributed by either race or by the advocates of either creed: so that it may be possible to reconstruct from the materials available a satisfactory sketch of the progressive stages of technic skill and the home demands upon the craft, till we reach, at last, the complete ideal of a money coinage.

It would be obvious to the most casual inquirer, perusing the precepts and enactments embodied in the Statutes of Manu, that there must have existed some recognized and conventional means of meeting the ordinary wants of commerce and exchange, incident to the state of society therein typified, such as would involve immediate liquidation or ready means of payment in some tangible form. The scale of fines, the subdivisions of the assessments of tolls, the elaboration of the rates of interest,¹ and even the mere buyings and sellings adverted to, so far in advance of any remnant of the usage of barter, would necessitate the employment of *coined* money, or some introductory or precursive scheme of equable divisions of metal, authoritatively or otherwise current by *tale*,² and emancipated from the necessity of weighing and testing each unit as it passed from hand to hand. We need not attempt to settle the correct theoretical definition of coined money, or what amount of mechanical contrivance is required to constitute a coin *proper*.³ It is sufficient to say that we can produce flat pieces of metal, some round, some

¹ Manu, viii. 140: "A lender of money may take in addition to his capital . . . $\frac{1}{80}$ part of 100, or $1\frac{1}{4}$ by the month." 142: "He may thus take *in proportion to the risk* in the direct order of the classes, two in the hundred *from a priest*, three *from a soldier*, four *from a merchant*, and five *from a mechanic*, . . . but never more, as interest by the month." See also viii. 152, "usury," and xi. 62. "The tax on *gains* on money" is also specified at $\frac{1}{20}$ (x. 120).

² One example may suffice. "The toll at a ferry is one *pana* for an empty cart; half a *pana* for a man with a load; a quarter for a beast used in agriculture, or for a woman; and an eighth for an unloaded man."—Manu, viii. 404.

³ I annex a note from Marco Polo showing how late a similar

system of substitutes for coins continued in force in certain parts of Asia. "The money matters of the people are conducted in this way. They have gold in rods, which they weigh, and they reckon its value by its weight in *saggi*, but they have no coined money. Their small change is made in this way. They have salt which they boil and set in a mould, and every piece from the mould weighs half a pound. Now eighty moulds of this salt are worth one *saggio* of fine gold." Col. Yule adds a note on the authority of M. Francis Garnier, that at "Seumao and Pouheul [*Esmok* and *Puer*] silver weighed and cut in small pieces is in our day tending to drive out the custom" of the use of salt as money.—Colonel Yule's *Marco Polo*, vol. ii. pp. 35, 37.

square or oblong, adjusted with considerable accuracy to a fixed weight, and usually of uniform metallic purity, verified and stamped anew with distinctive symbols by succeeding generations,—which clearly constituted an effective currency long before the ultimate date of the engrossment of the Institutes of Manu. The silver pieces of this class, the *purāṇas* of the Law-books, are found in unusual numbers, and over almost the entire length and breadth of Hindústán,—starting from the banks of the sacred Sarasvatī—to a crypt formed by nature, eighteen feet below the soil which now covers the inhumed city of ancient Behat¹—down the course of the Ganges to the sea, encircling the eastern and western coasts, and taking refuge even in the “Kistvaens” of the extinct races of the Dakhin.² That the silver coins should have been preserved to the present time, in larger numbers than their more perishable and less esteemed copper equivalents, was to be anticipated, especially considering the greater wear and tear and easy reconversion of the latter into either new dynastic mintages or their proverbial absorption by all classes for the construction of domestic utensils.³ But with all this, the relative proportions of each, which reward modern collectors,⁴ would seem to indicate that of the joint currencies, the silver issues must have already constituted a predominant feature in the circulating media of the day; and this evidence is by no means unimportant, as showing that while the standard of value was essentially *copper*, the interchangeable rates of the two metals must have been conventionally recognized while these imperfect currencies were in the course of formation and reception into the commerce of the country.

The tenor of the entire text of Manu conclusively demonstrates that the primitive standard or *stipis auctoritas*⁵ of the currencies of the Indians, like that of the Romans and those independent originators of their own proper civilization, the Egyptians, was based upon copper, a lower metal, which, however it may revolt the golden predilections of modern times, was clearly in so far preferable in the early conception of interchangeable metallic equivalents, that it constituted the most widely distributed and diffused representative of value, brought home to the simplest man's comprehension, and obviously in its very spread remained the least liable to sudden fluctuation from external causes, such as would more readily affect the comparatively limited available amounts of either of the higher metals. Hence, in remote ages, under an imperfect philosophy of exchange, copper may be said to have been the safest and most equable basis for the determination of all relative

¹ Journ. As. Soc. Bengal, iii. p. 44; Prinsep's Essays, i. p. 73. For range of localities, see also A. Cunningham, Bhilsa Topes, p. 354.

² Caldwell, Dravidian Grammar, p. 526: “It is a remarkable circumstance that no class of Hindús know anything of the race to which these Druidical remains belonged, and that neither in Sanskrit literature nor in that of the Dravidian languages is there any tradition on the subject. The Tamil people generally call the cairns by the name of *pāṇḍu-kuris*. *Kuri* means a pit or grave, and *pāṇḍu* denotes anything connected with the Pāṇḍus, to whom all over India ancient mysterious structures are attributed.” Walter Elliot, Madras Journal Lit. and Science, 1858, p. 227: “A large hoard of these coins was discovered in Sept. 1807, at the opening of one of the ancient tombs, known by the name of *pāṇḍu-kūlis*, near the village of Chavadi paleiyam, in

Coimbatore, thus identifying the employment of this kind of money with the aboriginal race whose places of sepulture are scattered over every part of Southern India.”

³ Tavernier, speaking of the coins of the neighbouring kingdom of Persia (in A.D. 1664), after mentioning the seigniorage of $7\frac{1}{2}$ per cent. on the silver money, adds, “but upon copper money not above $\frac{1}{2}$ or 1 per cent. at most. Whence it comes to pass that when a workman has need of copper, rather than lose time in going to buy it, he will melt down his *cashbekés*.”—p. 51.

⁴ Col. Stacey's collection contributes 373 silver coins of this class to 30 copper pieces (Journ. As. Soc. Bengal, xxvii. p. 256, 1858). The British Museum cabinets show 227 silver against 2 copper *punch* coins. Of the former 57 are round, the rest are square, oblong, or irregularly shaped.

⁵ Pliny, xxxiv. c. 1.

values; and so well did it seemingly fulfil its mission in India,¹ that as civilization advanced with no laggard pace, and foreign conquest brought repeated changes of dominant power, and whatever of superior worldly experience may have accompanied the intrusive dynasties, the copper standard continued so much of a fixed institution in the land, that we find it welcomed to the empty treasuries. Tímúr left behind him,² elaborated and adjusted in the reformed currencies of Shír Sháh,³ and accepted by Akbar (A.D. 1556-1605) as the universal arbiter of all fiscal and mercantile transactions, so that the State demands of his magnificent empire had to be defined in the alarmingly long sum of 6,62,97,55,246 *dáms*,⁴ a copper coin of the weight of 323·56 grains, of which 40 were reckoned to the new *rupee*. With the accumulated increase of wealth, the cumbrous volume of the copper coinage made an opening for the silver *rupee*, which established itself permanently in its place, and as time went on gold *mohurs* had an exceptional and temporary acceptance; but, like the *rupees* of Akbar, they were always left to find their own level in the market, as certain inexperienced servants of the East India Company discovered, to their astonishment, to be the still ruling idea of the community at large, when they prematurely declared gold a legal tender in 1766.⁵

I defer for the moment the description of the most ancient specimens of the domino coins, in order to complete as far as possible *ab intra* their true position in the general sequence of Indian inventions. A very important test in this respect of the antiquity of these sections of metal is contributed by the subsequent efforts of the natives of Hindústán to introduce improvements in the technic manufacture of coins, while still retaining the general typical devices, which advance from the crude punch impression into full-relief dies of various degrees of pretension and execution. The first stage of progress may be detected in the continued use of the primitive punch as modified by the enlarged surface of the die, which is made to cover some two-thirds of the oblong piece, whose lower face, however, still remains blank. The next advance may be traced in the adaptation of the anvil to the first crude idea of a reverse, in a sunk-die or catch of small dimensions cut into the anvil itself; which invention may be followed in its various stages of elaboration, from the rough *intaglio*, which served to fix the planchet, up to the complete superficial reverse of later examples. A parallel series, of independent growth, essayed to effect the fixation of the metal to be impressed, by giving a cup-like form to the reverse die, which was gradually advanced from its

¹ "In Gerhwál, copper, in weight, would appear to have been once the principal medium of exchange. This circumstance no doubt arose from that metal forming the staple commodity of the country. In adherence to old usages, the Zamindárs of Gerhwál, even now (1827 A.D.), in many of their contracts, stipulate a part of the price in a given weight of copper."—G. W. Trail, Report on Kumaon, As. Res. xvi. p. 191.

² Pathán Kings of Dehli, p. 359.

³ Ibid. p. 404.

⁴ The payments in kind, in the province of Kashmir, were all reduced into equivalents in *dáms*, and the single exception to the copper estimate occurs in the Trans-Indus *sarkár* of Kandahár, where the taxes were collected in Persian *gold tûmâns* and *dîndrs* (Gladwin's *Áin-i-Akbarî*, ii. pp. 3, 107, 110. See also i. pp. 2.

3, 4, 35, 37, 39). I do not lose sight of the fact of the long-continued use of an intermediate mixed silver and copper currency, which filled in the divisions between and co-existed with higher and lower coinage of unalloyed metals (Num. Chron. xv. pp. 163, 163; Prinsep's Essays, Useful Tables, p. 71). *Dáms*, like the old *karsha*, were also recognized and used as *weights* (see *Áin-i-Akbarî*, i. p. 307).

⁵ Sir James Steuart, *The Principles of Money, etc.*, in Bengal, p. 26 (Calcutta, 1772). This episode is instructive; and as the Government and its agents have passed away from the scene, we may quote without offence the just comments of an outspoken man, who concludes his remarks with "at last the gold currency fell altogether to many per cent. below its intrinsic value, according to the saying, *Dum vitant stulti vitia in contraria current.*"

unadorned convexity to all the honours of a device equal in spread and finish to the leading obverse.¹ Another mechanical means—specially favoured by the aptitude of the home workmen in that direction—consisted in the casting of coins. We can only follow the general progress of this art by the merits of the devices employed, which gradually improve in treatment and finish. The multitude and variety of this class of money extant would seem to point to mintages of more or less authority extending over a considerable period, and owing their origination to independent localities. So that under either the one aspect or the other these mechanical epochs must be taken to represent a large measure of time when initiated among a people so ever unwilling to move out of old grooves, and so notoriously prone “*stare super vias antiquas*.” All these advances, it is clear, must have been effected before the advent of the Greeks; for had the Indians waited till the Macedonians came to teach them, they would have spared themselves all these manifest efforts of invention, and humbly have essayed to copy the perfect coins of Alexander now ready to their hands, and would probably have succeeded in achieving about as curious an imitation of Greek art as the modern fabricators of Ráwal Pindí reproduce from Bactrian originals, to tempt unwary collectors of Indian antiquities.²

But the most practical and conclusive argument I can offer to satisfy numismatists of the interval that must have elapsed between the original date of issue of these punch coins and the intrusion of the Greeks, is the discovery of associated specimens of the local and exotic currencies, the former of which had been “much worn” in the ordinary traffic of the country, while the Greek pieces were, so to say, new from the mint.³

So many questions connected with the earliest form of Indian money have been incidentally adverted to in the examination of the weights upon which it was based, and from whose very elements as divisional sections of metal all Indian coinages took their origin, that but little remains

¹ The Indo-Scythians and Sassanians, though in full possession of all the more advanced methods of coining, still continued to use this shape.

² As I had occasion to refer to this question some years ago, I cannot do better than reproduce the conclusions then arrived at on a general review of the subject. “The not very discriminating demand by Europeans for Bactrian coins has, for long time past, stimulated the native goldsmiths and other cunning craftsmen of the Panjáb to fabricate copies of the ancient Greek originals; this is usually effected with considerable skill by a casting of silver, more or less debased, in ordinary clay moulds, produced from direct impressions of the medal to be imitated. So that the intentional forgery simply constitutes, for those who would use it as an aid to history, a very close reproduction of a genuine model. The most frequent practice is to cast in silver, and on rare occasions in gold, counterparts of the true copper coins; as the more precious metal is more suitable for the purpose, and when turned out meets with a readier sale, at prices far higher in proportion than specimens of the lower currency. This prevailing usage does not, however, debar the *fac-simile* reproduction of the more rare silver coins in that metal. Indeed, within my own limited experience, I have had occasion to examine a collection made by an Officer of H.M.S. 10th Foot at Pesháwar, in which I discovered an absolute handful of silver casts, of various degrees of merit, all

taken from one exquisite original of Agathocles's Panther type of money, which had, itself, without the purchaser's suspicion of its comparative value, found its way into a re-association with its own family. But while pleading for the utility of *bona-fide* casts, which in some cases almost approach the accuracy of electrotypes, I must add, for the credit of Bactrian numismatics, that no collector of ordinary acuteness need fear to be deceived by modern forgeries properly so called, that is, where dies have been cut for the purpose of producing new coins. Here Oriental aptitude is altogether at fault, the Eastern eye of the present day is unable to realize equally as the hand is incapable of conveying a semblance of Greek art.”—J.R.A.S. xx. 123.

In addition to this, I may refer the reader to the curious revelations on the constitution of a School of Art, established for the deception of European purchasers, at Ráwal Pindí, contributed to the J.A.S. Bengal, in 1856, by Col. T. Bush. See also a paper by Gen. Cunningham, “On Counterfeit Bactrian Coins,” J.A.S.B. ix. p. 393.

³ The discovery by Mr. E. C. Bayley, in 1853, “of a number of silver coins in the Kangra district, comprising specimens of Antimachus II., Philoxenes, Lysias, Antialkidas, and Menander, together with a few punch-marked pieces, the last being *much worn*, whilst all the Greek coins were comparatively *fresh*.”—Gen. Cunningham, Num. Chron. 1873, p. 209.

to be said in regard to the introductory phase of local numismatic art, beyond an explanation of the technical details, and a casual review of the symbols impressed upon these normal measures of value. The contrast, however, between the mechanical adaptations of the East and West may properly claim a momentary notice, with the view of testing the validity of the assumption I have consistently maintained respecting the complete independence of the invention of a metallic circulating medium by the people of Hindústán.¹

Many years ago the late Mr. Burgon² correctly traced, from the then comparatively limited data, the germ and initial development of the art of coining money in Western Asia, describing the process as emanating from the Eastern custom of attaching seals as the pledge of the owner's faith in any given object. This theory satisfactorily predicated the exact order of the derivative fabrication of coins, which may now, with more confidence, be deduced from the largely-increased knowledge of the artisan's craft and mechanical aptitude of the ancient inhabitants of Mesopotamia, the relics of which the researches of Layard, Loftus, and Botta have recovered in so near an approach to their primal integrity. The universal employment of clay for almost every purpose of life,—including official and private writings, with the connecting seals that secured even leather or parchment documents,—in which gods were fashioned,³ of which houses were built and coffins⁴ constructed, naturally led up to marked improvements in the processes of stamping and impressing the soft substance nature so readily hardened into durability, and to which fire secured so much of indestructibility. If moist clay was so amenable to treatment, and so suitable for the purpose of receiving the signets of the people at large, that it "turned as clay to the seal," we need scarcely be unprepared to find yielding metals speedily subjected to a similar process; for the transition from the superficially-cut stone seal to the sunk die of highly-tempered metal which produced the Darics, would demand but a single step in the development of mechanical appliances. In effect, the first mint stamps were nothing more than authoritative seals, the attestation-mark being confined to one side of the lump of silver or gold, the lower surface bearing traces only of the simple contrivance necessary to fix the crude coin. In opposition to this almost natural course of invention, India, on the other hand, though possessed of, and employing clay for obvious needs,⁵ had little cause to use it as a vehicle of record or as the ordinary medium of seal attestations; if the later practice may be held to furnish any evidence of the past, her people must be supposed to have written upon birch bark,⁶ or other equally suitable natural substances so common in the

¹ Prinsep's *Essays* (London, 1858), vol. i. p. 217; *Num. Chron.* n.s. (1863) vol. iii. *note*, p. 226.

² *Numismatic Journal*, 1837, vol. i. p. 118.

³ See the clay statue of Venus, Layard's *Nineveh*, p. 477. "They first made these effigies in earthenware, but afterwards, according to their different arts, they sculptured them in stone, and cast them in silver and gold."—Epiphanius, *Cory*, p. 55.

⁴ Mr. J. E. Taylor, *Journ. Roy. As. Soc.*, xv. p. 414; Loftus, *Chaldea*, p. 204.

⁵ Wilson, *Rig. Veda*, vol. iii. p. xiv. Arrian, lib. v. cap. xxiv., and lib. viii. cap. x.; Hiouen-Thsang, *Mémoires*, vol. i. p. 333, etc.

⁶ *Journ. As. Soc. Bengal*, ii. p. 337. The primitive Persians of the north-east also wrote upon birch bark, Hamza Isfahání, under the events of A.H. 350 (A.D. 961), adverts to the discovery at Jai (Isfahán) of the rituals of the Magi, all of which were written, in the most ancient Persian language, on birch bark. See also Q. Curtius, viii. 9, § 15; Reinaud, *Mém. sur l'Inde*, p. 305; *Ariana Antiqua*, pp. 60, 84; Prinsep's *Essays*, ii. p. 46. There are rolls of birch bark in the India Office Library still folded as they were found, and probably as legible as when they were first taken from the Topes in Afghánistán by Masson in 1837.

south, from very remote ages,¹ while for their seals² they may perchance have employed the indigenous *lac*, if not the direct impression in ink, though they recognized the use of burnt clay for the sigillary invocations they wished to perpetuate before the altars of their gods.³

The practical advance in India from ever-recurring weighings towards fixed metallic currencies was probably due to the introductory adoption of lengths of uniformly-shaped bars of silver (Plate I. Figs. 1, 2, 3), which, when weight and value gradually came to require more formal certificates, were adapted designedly to the new purpose by change of form and a flattening and expansion of surface, in order to receive and retain visibly the authoritative countermarks. One part of the system was so far, by hazard, in accord with the custom of the West, that the upper face alone was impressed with the authenticating stamps, though the guiding motive was probably different, and the object sought may well have been the desirable facility of reference to the serial order of the obverse markings—each successive repetition of which constituted a testimony to the equity of past ages.

The lower face of these domino-like pieces is ordinarily indented with a single minor punch, occupying as a rule nearly the middle of the reverse. These dies, though of lesser size, follow the usual symbolical representations in vogue upon the superior face. There are scarcely sufficient indications to show if the dies in question constituted a projected portion of the anvil; but I should infer to the contrary: nor does the isolation of these symbols, in the first instance, prevent repetitions of small *reverse* punch-marks over or around their central position; in some cases, though these form the exceptions, the clear field of the reverse is ultimately devoted to the reception of the *obverse* or larger devices, which anomaly recurs, of necessity, to a greater extent with those pieces which have continued long in circulation, and more especially is this found to be the case among the residue of this description of currency in Central India and the Peninsula, where ancient customs so firmly resisted the encroachments of foreign or extra-provincial civilization.⁴

¹ Arrian, viii. 7; La Vie de Hiouen-Tsang, Paris, 1853, p. 158; Aín-i-Akbari, ii. p. 15.

² At a meeting of the Bombay Branch R.A.S., on 11th April, 1872, "a report was read by Dr. Bhau Daji on thirty Hindú punch coins and a gold ring, found in the village of Shinhi, near Kolapúr." Dr. Daji remarks: "The thirty coins vary from 45 to 53 grains in weight; the symbols punched (on their surfaces) clearly relate to Buddhism. The gold ring, which was found in the same pot, has the name of the owner (*Nadibhagasa* or *Nandibhagasa*) engraved on it, and the character of the alphabet enables me to pronounce it 2100 years old, *i.e.* nearly of the age of Aśoka. The ring is octagonal on the outside surface, each side of the octagon forming an oval seal. The weight is 274 grains, diameter nine-tenths of an inch. On the surface of the oval seals the following figures are engraved: 1. The inscription; 2. A lion; 3. Two human standing figures; 4. An elephant; 5. A fig tree with a railing round the trunk; 6. A horse; 7. Two fishes; 8. A deer."

³ These *chaityas* or miniature clay temples of the Buddhists inclosed a stamped seal bearing the recognized formula *Ye Dharmā hetu*, etc.; both the seal and its protective casing were made durable by a repetition of the firing. See J.A.S. Bengal, iv. p. 32, xxiii. p. 474; J.R.A.S. xvi. p. 37; Ariana Antiqua, p. 51. These devotional offerings may be supposed to have been kept

ready-made at the various shrines, for sale to the pilgrims, who deposited them before the statue of Buddha, leaving them as permanent *mechanical* prayers to aid the salvation of the devotee, —as in the same Faith, the water-wheel of the Tibetan village turned, in its course, the *written* prayers of the community at large.

⁴ I had long been under the impression that the royal prerogative of coining money was less understood and less jealously guarded in the Southern peninsula than in the Northern provinces of Hindústán. In my late work on the Pathán Kings of Dehli (p. 344), I was able to show, from a neglected passage in Ferishtah, that in A.D. 1357–1374 goldsmiths and dealers in bullion were authorized, by prescriptive right, to fabricate money at will on their own account, without being subjected to any check or control on the part of the ruling power. This supposition is further confirmed by recently prevailing custom. "There are mints at almost all the principal towns in Central India. . . . The right of coining is vested in no particular body or individuals; any banker or merchant sufficiently conversant in the business has merely to make application to Government, presenting at the same time a trifling acknowledgment, engaging to produce coin of the regulated standard, and pay the proper fees on its being assayed and permitted to pass current."—Sir J. Malcolm, Central India, 1832, ii. p. 80.

As far as the typical designs in themselves, when compared with later Indian symbolical adaptations, are concerned, they would seem to refer to no particular religious or secular division, but, embodying primitive ideas, with but little advanced artistic power of representation, to have been produced or adopted, from time to time, as regal or possibly metropolitan authorities demanded distinctive devices. It would be useless, at this stage of the inquiry, to attempt to decide whether these discriminating re-attestations appertain primarily to succeeding dynasties, progressive generations of men, or whether they were merely the equitable revisions of contemporary jurisdictions. Though more probably, as a general rule, the simple fixed weights of metal circulated from one end of the country to the other, in virtue of previous marks, only arrested in their course when seeming wear or dubious colour called for fresh warrant: or incidentally, when new conquerors came on the scene and gratuitously added their hereditary symbols. The devices, in the open sense, are all domestic or emblematic within the mundane range of simple people—the highest flight heavenwards is the figure of the sun, but its orb is associated with no other symptom of planetary influences, and no single purely Vedic conception. So also, amid the numerous symbols or esoteric monograms that have been claimed as specially Buddhist,¹ there is not one that is absolutely and conclusively an origination of, or emanation from, that creed. The *Chaitya* or tumulus other Scythians practically sanctified in advance of them; the *Bodhi-Tree* was no more essentially Buddhist than the Assyrian Sacred Tree,² the Hebrew Grove,³ or the popularly venerated trees of India at large.⁴ That eminently Buddhist symbol, the *Swastika* (Nos. 2, 9, of line 17) is now found to have had a wide acceptance in Europe, as well as in Asia, and so little reverence had it attained in India at this early period, that Pāṇini describes it as “a mark for cattle.”⁵

Equally on the other part Vedic advocates will now scarcely claim the figure of the objectionable Dog,⁶ or seek to appropriate to Aryan Brahmanism ploughs, harrows or serpents. The first of these, the dog, formed a very favourite and wide-spread device among the early punch-dies, but at this time he seems to have been merely “the friend of man,” though we may recognize the fact that as he was honoured as a god in Egypt and elsewhere, held a place in the Zodiac, and was

¹ Sykes, J.R.A.S. v. 451; Cunningham, Bhilsa Topes, 351, plates xxxi. xxxii. B. H. Hodgson, J.R.A.S. xviii. 393.

² Gosse's Assyria, 94; Rawlinson's Ancient Monarchies, ii. 235.

³ Smith's Dictionary of the Bible, article “Grove,”—doubts are raised regarding the correctness of the translation of the word *Asherah* as a grove. See also note in Gesenius, *sub voce* *Asherah*. Pliny says, “Trees formed the first temples of the gods,” xii. 2. See also Inscription of Nabonidus, “Lord of the temple of the great Asoca tree.” Fox Talbot adds the remark: “This reminds one of the holy *nu* tree (or sycamore) of Egypt.”—Journ. R. A. S. xix. p. 195.

⁴ “Deos putant, quicquid colere coeperunt, arbores maxime, quas violare capital est.”—Q. Curtius, viii. ix. 34. Wilson, *Megha Dūta*, ver. 157—

“Then shall the ancient Tree, whose branches wear
The marks of Village reverence and care.”

Ward's *Hindus*, iii. 204. So also *Tulasi*,—*Ocymum sanctum*, or Sacred Basil. Ward gives a list of no less than seven Sacred Trees in addition to the *Tulasi*. Dr. W. W. Hunter, “Rural Bengal,” pp. 131, 183, says: “Adjoining the Santal village is a

grove of their national tree (the *Sāl*), which they believe to be the favourite resort of all the family gods of the little community.”

⁵ “That Pāṇini, as Patanjali tells us, and Kātyāyana gives us to understand, used letters in his *adhikāra* rules for the notation of numeral values, does not follow, we must admit, from his own words in the quoted *Sūtra* (i. 3, 11); but there is a rule of his (vi. 3, 115), in which he informs us that the owners of cattle were, at his time, in the habit of marking their beasts on the ears, in order to make them recognizable. Such signs, he says, were, for instance, a swastika, a ladle, a pearl, etc.; yet he mentions besides, *eight and five*.”—Goldstücker's Pāṇini, p. 59. It is stated in the *Mahābhārata* that “every three years it was the custom for the Kauravas to go out into the pastures and mark all the calves, and to renew the marks on the cows.”—Wheeler, *Mahābh.* p. 194. So also Arrian, *Indica*, cap. v.: “The club of Hercules marked the oxen of the Sibæ.” A symbol which was perpetuated on the Greek coins of Menander.—Prinsep's *Essays*, ii. 195; *Ariana Antiqua*, iv. 10.

⁶ Manu, iii. 92, iv. 208, x. 51, 91, 106, etc. Max Müller, *Science of Language*, ii. p. 481.

embodied in statues and bas-reliefs on the Euphrates, he might well have received consecration in India, especially after Yudhishthira had claimed and was permitted to take his canine companion to *Indra's* heaven,¹ and when modern Brahmans are found to assist at the rites of Bhaironáth's temple at Benares, where his "dog, too, is holy."² The playful puppy on the coins, however, does not seem to have attained divine honours, though his more solid successor or near type of the Indian Dog presented to Alexander, met with on subsequent mintages,³ seems to guard one of the mystic symbols of the kind figured at the commencement of line 16 of the accompanying Plate. In brief, these primitive punch-dies appear to have been the produce of purely home fancies and local thought, until we reach incomprehensible devices, composed of lines, angles, and circles, which clearly depart from Nature's forms; and while we put these aside as exceptional composite designs, we may accept unhesitatingly as of foreign origin the panther of Bacchus with his vine (line 6), engraved in a style of latent Greek art, which overlays the mixed impressions of earlier date and provincial imagery, and appears only towards the end of the career of the punch-marked coins, in their north-western spread, before they were finally absorbed in that quarter by the nearly full-surface die-struck money with devices of an elephant, the symbol of Indian conquest, and the avowed Dionysiac panther;⁴ which class in turn merge naturally into the similar though advanced art fabrics of the mints of Agathocles and Pantaleon, of square or oblong form,⁵ a shape the Greeks had not previously made use of, but which, when once adopted, they retained without scruple, whatever their early prejudices might have been—possibly out of respect for local associations, a motive which weighed sufficiently with their successors and other Bactrian Hellenes to induce them to perpetuate the square indifferently with the circular coins.⁶ The exceptional, or in this

¹ Mahábhárata, Wilson's Works, iii. p. 287:—

"... admitted to that equal sky,

His faithful dog shall bear him company."—Pope.

Muir, Sanskrit Texts; Talboys Wheeler, i. p. 454.

² Sherring, "The Sacred City of the Hindus," p. 63.

³ Prinsep's Essays, pl. xx. pp. 34, 36. J.A.S.B., iv. pl. 34, figs. 20, 21; pl. 35, figs. 34–36.

⁴ These coins are still mere compromises, being formed from an obverse punch, bearing the device of a Panther with a free *Swastika* and the *Chaitya*, with a full surface reverse of the Elephant and the *Chaitya* repeated. Ariana Antiqua, pl. xv. figs. 26, 27; Prinsep's Essays, i. pl. xx. figs. 50, 51, page 220; Cunningham's pl. i. etc.

While upon this subject, I may notice the discovery of the name of Agathocles in Bactrian characters on a coin of somewhat similar fabric, but the oblong square is rounded off on one corner so as to form almost an irregular triangle. His name, it will be remembered, has hitherto only been found in the Indian-Páli transcript of the Greek (Num. Chron. n.s. vol. iv. p. 196). The piece in question has, on the obverse, a *Chaitya*, with a seven-pointed star, and the name *Akathukrayasa*. The reverse bears the conventional sacred tree, with the title *Maharoja* strangely distorted into *Hi,rajasa,me* or *He,ragasa,me*. Gen. Cunningham interprets this legend as *Hiduja same*, "lord of the Indians"?—Num. Chron. viii. (1868), p. 282.

⁵ Ariana Antiqua, pl. vi. figs. 7, 8, 9, 11; Prinsep's Essays, pl. xxviii. 8, 9; vol. ii. pp. 179, 180; Journ. des Sav. 1835, pl. i. fig. i.

⁶ To show how essentially the square form of piece constituted the traditional currency of the land, I may quote the account of the bas-relief of the purchase of Prince Jeta's field at the newly discovered Tope at Barahat, the date of which may safely be placed in the 2nd or 3rd century B.C.

"But by far the most interesting of all Mr. Beglar's discoveries is a bas-relief representing the famous *Jetavana* monastery at Srávasti. The scene is labelled *Jetavana Andhapediko dati koti santhatena ketá*, which I take to mean that 'Anáthapindika buys (*ketá*) the Jetavana for certain *kotis* of money.' To the left there is a building labelled *Kosambikuti*, a name which has already appeared in my Srávasti inscription. A second building near the top is labelled *Gadhakuti* or *Gandhakuti*. In the foreground there is a cart which has just been unladen, with the pole and yoke tilted upwards, and the bullocks at one side. The story of the purchase of Prince Jeta's garden by Anáthapindika for eighteen *kotis* of *masurans* is told in Hardy's Manual of Buddhism. According to the legend, Prince Jeta, not wishing to sell the garden, said that he would not part with it for a less sum than would pave the whole area when the pieces of money (*masurans*) were laid out touching each other. This offer was at once accepted by Anáthapindika, and accordingly the courtyard is represented covered with ornamented squares, which touch each other like the squares of a chess board, but do not break bond as a regular pavement of stones or tiles would do. For this reason I take the squares to represent the square pieces of old Indian money. Beside the cart there are two figures with pieces in their hands. These I suppose to be Anáthapindika

case indigenous form, found favour in later generations with the Muhammadan conquerors, who sanctioned unreservedly square pieces in common with the circular forms, up to the time of Sháh Jahán (A.D. 1628-58). But though these unshapely bits of metal ran on in free circulation up to the advent of the Greeks, this by no means implies that there were not other and more perfect currencies matured in India. The use of the time-honoured punch survived in the Peninsula till very lately, but no one would infer from this coincidence that there were not more advanced methods of coining known in the land. In fact, like other nations of the East, the Hindús have uniformly evinced more regard for intrinsic value than criticism of the shape in which money presented itself.

Many of these ancient symbols, more especially the four-fold Sun (line 17, Plate I.) are found established in permanence on the fully-struck coinage of Ujain,¹ of a date not far removed from the reign of Aśoka, who once ruled as sub-king of that city; the probable period of issue is assumed from the forms of the Indian-Páli letters embodying the name of Ujjenini, the local rendering of the classical Sanskrit *Ujjayinī*. Associated in the same group as regards general devices, and identified with the apparently cognate mintages of similar time and locality, there appear other symbolical figures, which no predilection or prejudice can claim as exclusively Buddhist; indeed, whatever antagonism and eventual hostility may ultimately have arisen between the leading creeds of India, it is clear that at this period, and for long after, the indigenous populations lived harmoniously together;² like all things Indian, old notions and pre-existing customs retained too strong a hold upon the masses to be easily revolutionized; and if at times a proselytizing Buddhist or an able and ambitious Brahman came to the front,³ and achieved even more than provincial

himself and a friend counting out the money. In the middle of the court are two other figures, also with square pieces in their hands. These I suppose to be the purchaser's servants, who are laying down the coins touching each other. To the left are several persons of rank looking on, whom I take to be Prince Jeta and his friends. The whole scene is very curious; and when we remember that the bas-relief is as old as the time of Aśoka, it does not seem too rash to conclude that we have before us a rude representation of the buildings of the famous Jetavana which were erected by Anáthapindika during the lifetime of Buddha."—Gen. Cunningham, Report of As. Soc. Bengal.

At the Aswamedha Sacrifice of Dhritarāshtra a space of "ground was covered with 400 golden bricks; and the sage Vyāsa . . . and other Rishis seated themselves on the golden pavement."—Wheeler, *Mahābhārata*, p. 429.

¹ Journ. As. Soc. Bengal, vol. vii. pl. lxi. p. 1054.

² Stevenson, Journ. Bombay Br. R.A. Soc. "On the whole, we find that Brahmans and Buddhists, in these early days of our era, lived in peace with one another, and were both favoured and protected by the reigning sovereigns; and that among the former the Sanskrit language was used in writing and the Prākṛit by the latter; the two languages probably holding the same place to one another that the Sanskrit and the vernaculars do at present." So also the whole narrative of Hiouen-Thsang's travels in India (A.D. 629-645) testifies to a like amiability; and Mr. Hall has discovered that King Harsha of Kanauj accepted dedications of the works of Buddhist and Brahman with equal

impartiality. — Sherring, "The Sacred City of the Hindus," Preface, xxxi. Hiouen-Thsang, *passim*.

³ Since the above sentence was published, some years ago, an interesting question has been raised as to the missionary influence of Brahmanism. Prof. Max Müller, in his lecture in Westminster Abbey, clarified the various religions of the earth as missionary and non-missionary, including in the former category "Buddhism, Muhammadanism, and Christianity," and under the latter "Judaism, Brahmanism, and Zoroastrianism." Mr. A. C. Lyall, of the Bengal Civil Service, in commenting upon these positions (*Fortnightly Review*, July 1, 1874), remarks: "Brahmanism is enormously the most important of the religions classified in the lecture as non-missionary; and it is said to be dead. What I have to say is, that to an eye-witness this religion is not dead, nor dying, nor dangerously ill; and, moreover, that so far from it being a non-missionary religion in the sense of a religion that makes no proselytes, one may safely aver that more persons in India become every year Brahmanists than all the converts to all the other religions in India put together. . . . If by Brahmanism we understand that religion of the Hindús which refers for its orthodoxy to Brahmanic scriptures and tradition, . . . then this religion still proselytizes in two very effective modes. The first is the gradual Brahmanizing of the aboriginal, non-Aryan, or casteless tribes. . . . The second is by the working of the devotees and spiritual leaders who found new sects and set up new lights in divine matters. . . . Its working is further defined as a social

renown, the Indian community at large was but little affected by the momentary influence; and it is only towards the eighth or ninth century A.D. that, without knowing the causes which led to the result or the means by which it was accomplished, we find Brahmanism dominant and active in persecution.

I have now to advert to the symbols embodied in the Plate. I shall notice only those of more moment in the text of this necessarily discursive introduction to the coins of India at large. The engraving will perhaps be sufficiently explained under the subjoined synopsis.

A.	Heavenly bodies	1	The Sun.
B.	Man, his feet, etc.	2	
	Animals	3	Elephants.
	„	4	Dogs, etc.
	„	5	Cows, deer, rhinoceri, etc.
	„	6	Panthers, etc.
	Fish	7	
	Reptiles	8	
C.	Home life	9	Ploughs (?).
	„	9*	Cups, vases.
	„	10	Harrows.
	„	11	Wheels.
	„	12	Bows and arrows.
D.	Imaginary devices	13	Chaityas.
	„ „	14	Trees of various kinds.
	„ „	15	<i>Mandālas</i> , or mystic circles.
	„ „	16	Magic formulæ.
E.	Reverse dies	17	

system, and a very elastic one; while the people in India, as a body, still need a religion which, like Brahmanism, provides them with social rules and with laws of custom as well as of conduct."

Max Müller, in reply, answers with full frankness, "On all truly essential points I feel certain that I am completely at one with Mr. Lyall;" and he goes on to remark that, "in explaining the meaning of the word 'proselyte,' or *προσέλυτος*, I had shown that literally it means those who come to us, not those to whom we go, so that even a religion so exclusive as Judaism might admit proselytes,—might possibly, if we insisted on the etymological meaning of the word, be called proselytizing, without having any right to the name of a missionary religion. However, Mr. Lyall does not stand alone, as others have claimed for Judaism and Zoroastrianism the same missionary character which he claims in the name of Brahminism." Max Müller further cites a passage from his own work on Sanskrit Literature, where he had already recognized the admission of the Rathakaras, or carpenters, to Vedic sacrifices.

Mr. A. C. Burnell, of the Madras C.S., had, long before this question was raised, given us the uncontroversial result of his own

experience in this matter, by remarking that "the Brahmanization of the wild tribes in Central and South India is going on to this day, and is yet far from complete."—*Indian Antiquary*, October, 1872, p. 311.

Mr. Wheeler also comments independently on this subject in the following terms:—"The missionary operations of the Brahmans are indeed worthy of special study. They have been carried on from time immemorial, and the process is still going on amongst hill tribes and other remote populations. A Brahman makes his appearance in a so-called aboriginal village, and establishes his influence by an affectation of superior sanctity, aided by the fame of his spells, incantations, mystic rites, and astrological predictions. He declares the village idol to be a form of one or other of the great gods or goddesses of the Brahmanical pantheon; and he professes to teach the true forms of worship. He divides the villagers into castes, and introduces caste laws. In this manner the populations of India have been brought under the spiritual domination of the Brahmans, and the caste system has been introduced into secluded regions, in which it was previously unknown."—*History of India*, vol. iii. p. 401.

In addition to the illustrations figured in the accompanying Plate, I insert a woodcut of certain independent tracings, copied from the punch-coins in the Museum of the Asiatic Society of Bengal, which was prepared for my edition of Prinsep's Essays in 1858.



Under Class A in the engraving appears the single representation of the Sun: no other planet or denizen of an Eastern sky is reflected in early Indian mint-symbolization. In examining the general bearing of these designs, the first point to determine is,—does the Sun here, as the earliest or deepest-sunk emblem, stand for an object of worship? *Savitri* or *Súrya* undoubtedly held a high position in the primitive Vedic theogony,¹ and it is a coincidence singularly in accord with its typical isolation on these pieces that the Indo-Aryans, unlike their Persian brethren, dissociated the *Sun* from all other planetary bodies. But, with all this, there is an under-current of evidence that the Scythians had already introduced the leading idea of Sun-worship into India prior to any Aryan immigration; for even the

Vedic devotion to the great luminary is mixed up with the obviously Scythic *aswamedha*, or sacrifice of the horse.² Then, again, arises the question as to whether this Sun-type, which appears in the lowest strata among all the mint dies, and is so frequently repeated in slightly modified outlines, does not refer to the more directly Indian traditional family of the *Súrya Vanšas*,³ who eventually are made to come into such poetic hostility with the *Chandra Vanšas*, or Lunar branch. Neither one race nor the other is recognized or alluded to in the text of the Vedas; but abundance of reasons may be given for this abstinence, without implying a necessary non-existence of Children of the Sun before the date of the collection of those ancient hymns. However, looking to the decidedly secular nature of the large majority of the figures in subsequent use upon this class of money, I am content for the present to adopt the popular rather than the devotional solution; or, if the latter alternative find favour, it must be conceded that the Buddhists incorporated the symbolism of the early worship of the Sun into their own system, which in itself may fortuitously have carried them through many sacerdotal difficulties, even as, if we are to credit resemblances, the Aryans successfully appropriated the Buddhist adaptation of an older form in the outrageous idol of *Jagannáth*,⁴ or secured as a Brahmanic institution the ancient Temple of the Sun at *Multán*.⁵ Whatever may have been the course in other lands, it is clear that, in India, it was primarily needful, for the success of any new creed, to humour the prejudices and consult the eye-training of the multitude, as identified and associated with past superstitious observances.

¹ Wilson, *Rig Veda Sanhitá*, vol. i. pp. xxvii. xxxii.; vol. ii. p. vii.; vol. iii. p. x.

² Wilson, *Rig Veda Sanhitá*, vol. ii. p. xiv.

³ Prinsep's Essays, vol. ii. U. T. pp. 232, 236, and p. 45*n. ante*.

⁴ Stevenson, *J.R.A.S.* vii. p. 7; Cunningham, *Bhilsa Topes*, p. 358, pl. xxxii. figs. 21, 23; Hunter's *Orissa*, i. p. 84: "In the

uncertain dawn of Indian tradition, the highly spiritual doctrines of Buddha obtained shelter [at *Jagannáth*]; and the golden tooth of the founder remained for centuries at *Purí*, then the Jerusalem of the Buddhists, as it has for centuries been that of the *Hindús*." See also "*Rural Bengal*," p. 184.—*Áin-i-Akbari*, ii. 18.

⁵ Reinaud, *Mémoire sur l'Inde* (Paris, 1849), p. 97.

Among other figures of very frequent occurrence and very varying outlines, a leading place must be given in this series to the so-called *Chaityas* or *Stūpas*.¹ There is little doubt but that the crude tumulus originally suggested the device, for even to the last, amid all the changes its pictorial delineation was subjected to, there remains the clear ideal trace of the central crypt, for the inhumation of ashes, or the deposit of sacred objects to which it was devoted in later times.

Much emphasis has been laid upon the peculiarly Buddhistic character of this symbol. It is quite true that its form ultimately entered largely into the exoteric elements of that creed, but it is doubtful if Buddhism, as pretendedly expounded by *Sākya Sinha*, was even thought of when these fanciful tumuli were first impressed upon the public money; and to show how little of an exclusive title the Buddhists had to the *Chaitya* as an object of religious import,² it may be sufficient to cite the fact that, so far as India is concerned, its figured outline appears in conjunction with unquestionable planetary devices on the coins of the Śāh kings of Surāshtra,³ who clearly were not followers of Aśoka's *Dharma*. But, as the Buddhist religion avowedly developed itself in the land, and was of no foreign importation, nothing would be more reasonable than that its votaries should retain and incorporate into their own ritualism many of the devices that had already acquired a *quasi*-reverence among the vulgar, even as the Sun re-asserted its pristine prominence so certainly and unobtrusively, that its traditional worshippers, at the last, scarcely sought to know through what sectional division of composite creeds their votive offerings were consigned to the divinity whose "cultus" patriarchal sages, here as elsewhere, had intuitively inaugurated.

Many of the singular linear combinations classed under D as *maṇḍalas* (No. 15), which it would be difficult otherwise to interpret, may reasonably be referred to the independent conceptions of primitive magic; as, whatever may have been the religion of the various grades of men in its higher sense, it is manifest that even the leading and more intellectual rulers of the people retained throughout a vague faith in the efficacy of charms. The sacred *Mantras* themselves are often mere incantations, or combinations pretending "to compel the gods." Almost all the tales in Persian or Arabic authors bearing upon Alexander's intercourse with the unconquered nations of India turn upon their proficiency in the black art;⁴—traditions sufficiently warranted by the probability that he, a Greek, would readily seek revelations of this kind, even as he sought the knowledge of the art of the Chaldees.

So also with their own home legends—Buddha himself is made to study *Yoga*⁵—one-half of the revolution wrought by Chandra Gupta's advisers is placed to the credit of magic, and the

¹ The term चैत्य *Chaitya* was originally applied to any large tree held in peculiar sanctity, though the name was ultimately appropriated to the Buddhist *Stūpa*. Cf. τῦφω, τῦμβος, θάπτω, तप *tap*, Zend *tap*, *tafnu*, *dakhma*, تفتن "to burn" (دفن), *tepo*, *tepidus*, Italian *tufo*, hence the place of deposit of ashes, and eventually the *tumulus*. Cf. also स्तूप *stūp* "to heap," γήλοφος, σημαχέειν, etc., and the Pāli *tupha* of Aśoka, the *thupa* of the Books.—Wilson, Gloss.; Burnouf, i. 348; Stevenson, J.R.A.S. v. 192; Sykes, *ibid.* vi. 452; Pictet, 506.

² Prinsep, Journ. As. Soc. Bengal, iv. p. 687.

³ Journ. R. A. S. xii. p. 1; Prinsep's Essays, i. p. 425, ii. pl. xxxvii. p. 84; Journ. As. Soc. Bengal, vi. p. 377, vii. p. 347. Prinsep's reading of his coin (No. 11, p. 354, Journ. As. Soc. Bengal) as *Jinadāma*, "votary of Buddha," was an error; the name is *Jiva Dāma*.

⁴ Shāh Nāmāh, Macan, iii. p. 1299; Mujmal-al-Tawārīkh, Journal Asiatique; see also Ibn Khordādbāh, Journal Asiatique, 1865, p. 294; Mas'audi, ii. 452.

⁵ Lalita-Vistara, x., quoted by Max Müller, "Science of Language," p. 519. See also H. H. Wilson's Works (Dr. Rost's edit.), vol. iii. p. 364.

Nandas, whom he superseded, appear to have been special proficient in sorcery.¹ If this was the state of things in India in those semi-historic times, may not we adopt the parallel of other nations, and assume that, as so many crude hierarchies grew out of archaic divinings, these Indian symbols,² in their degree, may well have been emanations from a similar source, and have run an equal race into the higher dignity of representing things held more sacred? As such, their later reception into the series of the typical adjuncts of a faith formed *in situ*, need excite no surprise.

As most of these symbols will probably recur on the subsequent mintages of the country, where their connexion and bearing may be more closely traced, I content myself with this summary notice of the more prominent objects of the series, leaving to the Editors of succeeding sections of this work the task of more fully describing the typical devices and peculiarities of each in due order.

All critical essays on Numismatics are bound to touch upon the question of the *values*, either absolute or relative, of the currencies of which they treat. In the present instance the systematic scale of proportions—if any such stage had been reached—must rather be guessed at than authoritatively defined. We can, however, closely determine the value of the silver “bits,” as modern analyses have shown that the art of refining was at this period, like the coinage itself, in its infancy. The highest degree of purity attained barely reaches 80 per cent. of silver.³ The relative and exchangeable values of the three metals, of which we have extant specimens of only two, must equally remain much a matter of speculation; but I am under the impression that there was, even thus early, a tendency to theorize in the quaternary even numbers, which clearly prevailed for ages during the later life of the nation. The normal rate of exchange, judging by the test of more recent evidence, appears to have ruled conventionally, but by no immutable law, at gold to silver 1 : 8, silver to copper 1 : 64.⁴

¹ H. H. Wilson's Works (Dr. Rost's edit.), iii. 174, 175, 178. See also 372, 373, and i. 206, 212; ii. 377; iv. 131; v. 109, 143.

² Tantric “*diagrams*” were supposed to be of much efficacy (see Wilson's Works, ii. 78; see also i. 249). Burnouf speaks of “une sorte de diagramme mystique également familier aux Brahmanes et aux Buddhistes” (Lotus de la Bonne Loi, p. 625). We see similar curious linear combinations in the charms suspended from the necklaces at Sanchi (Fergusson, pl. iii. fig. 4). Many of these mystic symbols were affected by the Zoroastrian Persians (J.R.A.S. xiii. 425; Lajard, Culte de Mithra, etc.), and passed on into the Gnostic emblems of the West. See also

Cunningham's Bhilsa Topes, pls. xxxi. xxxii.; Rev. S. Beal, J.R.A.S. n.s. vol. v. p. 164.

³ General Cunningham has had an elaborate series of analyses made of these coins:—

a. by Native goldsmiths, per-centage of silver.	79.76
b. by Messrs. Johnson ,, ,,	78.31
c. by M. Claudet ,, ,,	76.77

A later set of silver pieces from Mathurá rose to 81.9 per cent.—Numismatic Chronicle, pp. 200, 202.

⁴ This question has been fully gone into in my Pathán Kings of Dehli, pp. 231, 364, 367, 409. See also Colebrooke, Asiatic Researches, vol. v. p. 92.

CHAPTER IV.

WEIGHTS OF ANCIENT COINS PROVED BY LATER ISSUES.

THE concluding chapter of this series may be brief, its object being simply to prove that my estimate of the theoretical weight of the ancient *rati* at 1·75 grains, if not absolutely final, is a very close approximation to the truth.

The assumed standard may now be tried by the test of the consistent retention of its normal *unit* in the consecutive coinages of the country for a period which can scarcely fall short of some five-and-twenty centuries.

Two different elements have hitherto obstructed any satisfactory determination of the exact weight of this primal basis: the one, the irregularity of the *gunjá* or *rati* seeds themselves, which necessarily vary under the influences of climate, soil, and other incidental circumstances of growth; the other, the importance of which has been completely overlooked, that modern inquirers have usually sought to solve the problem of this national weight by an appeal to modern coins, without having regard to the increase upon the old 175 grain *tankah* introduced in Shír Sháh's new *rupee*, which led to a natural ignoring of the traditional contents of the standard silver *ṣatamána*, or 100 *rati* piece of Post-Vedic authority, on the part of his successors, Native or European.

Those practical experimentists who have tested the weight of the *rati* by averages of the home-grown seeds themselves have arrived at the following varying results:—

1. Sir W. Jones ($1\frac{5}{16}$ th) ¹	1·3125	} Average.
2. Major Jervis ²	1·9124	
3. Major Sykes ³	1·9140	
4. Sir Walter Elliot ⁴	1·8127	
5. Mirat trials ⁵	1·93487	
6. Mr. Laidlay ⁶	1·8250	
7. General Cunningham ⁷	1·8230	

$$12·53447 \div 7 = 1·79063$$

¹ Gen. Cunningham has proposed a summary rectification of this $1\frac{5}{16}$ into $1\frac{6}{10}$, which would give a decimal return of 1·8333 grains, and would accord more nearly with the other independent results. The matter is not of very high moment, but if error there be in the first fraction, it is curious that it should not have struck Colebrooke, who, writing in 1798, perpetuated the former estimate, which his editor retains in the new issue of his works. London, 1873, p. 529. The original passage, giving Sir Wm. Jones's own interpretation, emphasized by the mention of "diamond scales," is printed in full words and italicized, as "a grain and *five-sixteenths*," in the Calcutta 4to. edition of the Asiatic Researches of 1790. Had the sum been expressed in figures, there might have been more probability of a mistake, such as suggested by Gen. Cunningham; and I notice in so far that, in the reprint of Colebrooke's Essay, reproduced in Sir

Wm. Jones's Works, London, 1801, viii. p. 870, the fraction of $\frac{5}{16}$ is erroneously converted into $\frac{3}{16}$.

² Jervis, *Weights and Measures of India*, Bombay, 1836, pp. 52, 59.

³ *Ibid.* p. 59.

⁴ *Madras Journal of Literature and Science*.

⁵ Mirat *Universal Magazine*, no. xiii. quoted in Sir H. Elliot's *Glossary of Indian Terms*, ii. p. 325.

⁶ Gen. Cunningham, *Numismatic Chronicle* (1873), p. 196.

⁷ *Ibid.* Gen. Cunningham further cites a return obtained by Mr. Shakespeare, as stated to be given in his *Hindústáni Dictionary*, *sub voce rati*, amounting to 1·7966. The new edition of the work in question merely cites Sir H. Elliot's figures as 1·933, a misprint from No. 5 above given.

I have placed in the full prominence of text type all the verificatory trials I could trace that have hitherto been undertaken to establish the fundamental value of the *rati*, by the criteria of the weight of the modern counterparts of the ancient seed. The average of these independent returns so nearly approaches my own estimate that I need scarcely go further into the question, except to draw attention to the limited range and northerly boundaries of the countries to which the primitive "Laws of Manu" apply,¹ and the enhanced weight of the produce of identical plants with a habitat south of the Vindhya range exhibited in the Table of *phaseoli* at page 11.

Singular to say, Major Jervis, one of our most experienced investigators into the weights and measures of the Peninsula, was sorely puzzled at the extra weight of the *rati* developed in his own and Major Sykes's adjustments of the local seeds; hence his *húns* (gold coins), tried by this test, came to "exceed the weight of every such coin throughout India," and his *bhar*, which according to his calculation should have been 500lbs. avoirdupois, mounted up to a very inconvenient measure wherewith to have to *sell*.² This explanation receives additional support when we advert to the descending weight below the *rati*, which in these southern parts is always expressed in grains of rice instead of grains of barley, a gradation that of itself would indicate different accessories of clime and soil. It is however necessary to add, in derogation of this inference of the higher weight of the southern seeds, that confined experiments made at Mírat with 267 *ratis*, gave a return of 1·93487 grains; but, on the other hand, as the condition and surroundings of these seeds is not fully ascertained, and may otherwise have been exceptional, we may set-off the item that old, but very clean and full-sized seeds, now in the Museum at Kew, fall to as low an average as 1·5375 grains.³ It is a significant fact that though I can afford to disregard these minor divergences, in virtue of the more exact data supplied by my metallic tests, I am able to close this branch of the inquiry by a confession on the part of another of our esteemed administrators of the past generation, that the old seed test continued to be the most effective and trustworthy means of proof for all practical purposes up to very recent times in the outlying districts of British India.⁴

If the above inevitable divergences from the given theoretical system followed the changed domicile of those who confessed to a common basis of reckoning, we may well excuse our own countrymen, who, in the commercial sense, worked upwards from the sea to the old dominion of Kurukshetra, on the Jumna, and who had to learn their early lessons in Oriental currencies in a debased Muhammadanized school in Bengal.

Colebrooke's first essay towards the application of the *sikka* weight test to his "double *rati*" pretends to so little exactness that we need scarcely criticize its terms. He says, "But factitious *ratis* in common use [in 1798] should be double the *gunjá* seed; however they weigh less than

¹ See the geographical distribution, *antè*, p. 10.

² Weights and Measures of India, p. 59, etc.

³ 40 seeds = 61·5 gr. which ÷ 40 = 1·5375.

⁴ "In Central India every article is sold by weight. . . . Two species of weights are used in Central India, that of the silversmiths and jewellers, and the large or bazaar weight: the

former is founded on the grain of rice, and the *rati* or seed of the wild *Jamaica liquorice*. It is very simple, and is deemed immutable; while that of the bazaar, having as a standard the current rupee of the country, varies" (considerably).—Major-General Sir John Malcolm, Memoir of Central India, 1832, vol. ii. page 87.

2½ grains. For the *sikka* weight contains 179⅔ grains nearly; the *māsha* 17⅔ nearly; the *ratī* 2⅔ nearly."

Prinsep's investigations were far more searching and elaborate. He rightly estimated the old *rupees* at 175 grains,¹ but he was distracted by vague notions of reconciling *sikka rupees*, Calcutta weights, and Indian measures generally, into one homogeneous whole with European standards.² He, too, like less critical inquirers, clearly expected to discover the true *rati* of Manu amid the altered data of the Muhammadan system. But whereas the *rati* of the ancients constituted the essential *unit*, and secured the basis upon which the 100 *rati* (175 grain) *tankah* was formed, the factitious *rati* of the Muslims was merely an aliquot part— $\frac{1}{9\frac{1}{8}}$ of the comparatively recent *tola*, and $\frac{1}{9\frac{1}{8}}$ of the newly devised *rupee*; and no concurrent effort was made to secure its coincidence with the earlier sectional divisions established from time immemorial.³

The amalgamated scheme of the weights of India in 1528 A.D., prior to Shír Sháh's intervention, has been preserved for us in the text of the Emperor Bábar's Memoirs, and may be simplified and tabulated as follows :—

TABLE OF INDIAN WEIGHTS (from Bábar's Memoirs, p. 332).

8	ratis=	1	māsha.		
32	„ =	4	„ =	1	tang.
40	„ =	5	„ =	1	miṣḱāl.
96	„ =	12	„ =	1	tola.
1344	„ =	168	„ =	14	„ = 1 sir.
53760	„ =	6720	„ =	560	„ = 40 „ = 1 mann.
				12	„ = 1 māni.
				100	„ = 1 mindāsah.

“And it is fixed that everywhere 40 *sirs* make one *mann*. . . . They reckon jewels and precious stones by the *tang*.” See also note, p. 16, A’in-i-Akbari, Blochmann’s translation, Calcutta, 1868, and text, pp. 31, 36.

To this table may be added the still more composite scale of weights adjusted in the works of later Muhammadan writers.

¹ Prinsep's Essays, Useful Tables, p. 22.

² Prinsep pays a parting tribute to the indigenous civilization of India, in regretting the inconveniences resulting from our English interference with the traditions of the people, in respect to the double function of the current coin. The Indian system, when the English first became acquainted with it, combined all the advantages of a direct connexion between the coin and the unit of weight. They were in fact the same thing until the Regulation taking force from the 1st January, 1819, changed the standard purity of the coin by an addition of copper without altering its value in pure contents of silver. This measure increased the weight of the *rupee* by an awkward fraction of $\frac{12250}{176866}$ parts, and rendered all subsequent conversions of weight into money a matter of intricate calculation; for the old *rupee* was still retained as the unit of weight under the title of *sicca weight*, in contradistinction to the newly introduced *sicca rupee*: and it was allowed to regulate the bazar *mann*, which was 40 *sirs* of 80 *siccas* (or 179,666) each.—J.A.S. Bengal, i. p. 445.

³ We have here an apt example of the conflict arising from

official intervention amid the traditional customs of the country in the contact of unassimilated totals. General Cunningham, without, however, fathoming the cause of the anomaly, observes: "The same confusion of the numbers (as in the *angulas* of the *dhanu*) 96 and 100 exists in the monetary scale, in which we have 2 *bāraganis* or 'twelvvers,' equal to one *panchi* or twenty-five."—*Geography of India*, vol. i. p. 575.

KASHMÍR WEIGHTS, from the Aín-i-Akbari, ii. p. 156,
Gladwin's edition:—

1 *Tola* = 16 *māshas* of 6 *ratīs* each, or 96 *ratīs*.

1 Gold mohur=16 dams of 6 ratis each, 96 ratis, or 4 ratis more than the Dehli gold mohur.

Rabsasnu is a small coin of 9 *māshas* or 54 *ratis*.

Punchee is a copper coin in value $\frac{1}{4}$ *dám*; also called *kussereh*.

Bárahgáni is $\frac{1}{2}$ the *punchee* or $\frac{1}{8}$ *dám*.

Shukri is $\frac{1}{4}$ *bārahgāni*.

4 *Punchees* or *kusserehs* = 1 *hut*.

40 „ „ =1 *sásnu*, and $1\frac{1}{2}$ *sásnu* =1 *sikkah*.

100 *Sásnus* = 1 *lák* = 1000 royal *dáms*.

TABLE OF LATER INDIAN AND OTHER FOREIGN WEIGHTS, from the *Haft Kulzum*.

1 جَو <i>jao</i> (चव) barley-corn	= 1 حبة <i>habbat</i> , "a grain, a seed."
1 تشو <i>tashú</i>	= 2 حبه ,,
4 جو barley-corns	= 1 قيراط <i>kirát</i> (κεράτιον) Carob.
8 حبه ,,	= 1 دانگ (A. دانق) <i>dang</i> ($\frac{1}{8}$ th).
48 جو ,,	= 1 درهم (A. درم) <i>dirham</i> .
68 حبه ,,	= 1 مثقال <i>miṣkál</i> (مشقل).
306 حبه or 4½ مثقال	= 1 استار <i>astár</i> , سير <i>str</i> (सेटक).
510 حبه or 7½ <i>miṣkál</i> s	= 1 اوقية <i>aukiat</i> (ounce).
6120 حبه or 12 ,,	= 1 رطل <i>raṭl</i> (pound).
12240 ,, 24 ,,	= 1 من <i>mann</i> .
1½ <i>mann</i>	= 1 كيلجة <i>kailajat</i> .

See also variants in *Aín-i-Akbari*, Blochmann's Calcutta edition, p. 36.

Without encumbering this chapter with complicated figures, I summarize my estimates from the extant coins of the time of Shír Sháh and Akbar. Upon these data I reckon the *tola* of 12 *máshas* or 96 *ratis* at=186·0 grains, the Shír Sháhi *rupee* of 11½ *máshas* or 92 *ratis* at=178·25 grains, and Akbar's *rupees* at the same rate. This gives a return for the *rati* of 1·9375 grains. Shír Sháh's copper coinage, however little we could have expected anything definite from such crude materials, gives an absolutely identical result.¹ The late Col. William Anderson, an officer of considerable aptitude and experience in Oriental studies, estimated the *rati* from his own independent examination of the entire series of Akbar's mintages at the self-same 1·93 grains.²

I now reach the final stage of recapitulation and juxtaposition of the data embodied in the previous pages, which, however, simply resolves itself into a new application of the classical *Æs triplex*, or the history of the three parallel mechanical divisions of the old coinage elaborated *in situ*. These three concurrent denominations may be traced continuously till they are partially absorbed in the Muhammadan scheme of mint issues, though in some instances the old weights perseveringly made themselves felt in our own monetary system.

The first of these divisions consists of the archaic *purána*, the leading denomination in the present inquiry, whose weight is officially defined as 32 *ratis*; extant specimens of these crude pieces of metal come fully up to the weight of 56 grains.³ Proceeding onwards, and avoiding any possible complications due to Greek intervention, this same weight re-appears in the money of Sayála and Samanta Deva, the Brahmanical Sovereigns of the Panjáb and Northern India, in the ninth

¹ Pathán Kings of Dehli, p. 409.

² Prinsep's Essays, Useful Tables, p. 22. Prof. Story Maskelyne, of the Mineral Department, British Museum, also undertook an elaborate series of trials and comparisons of weights, with a view to determine the true amount of the

jeweller's *rati*. His conclusions are limited to a range of from 2·483 grains to 2·40 grains.—Journ. R. A. S. ii. n.s. p. 153.

³ Prinsep's Essays, i. p. 213; Sir W. Elliot, Madras Journal of Literature and Science, p. 229; Gen. Cunningham, Num Chron. 1873, p. 199.

century of our era.¹ It then runs through the entire issues of their Rájput successors, from whom it passed to Kutb-ud-dín and the Muhammadan conquerors in A.D. 1191, when it had become so much of a national institution, that the representative coins were known by the appropriate name of *Dehliwálas*, the exact weight being retained, though the value had become so irregular that each piece had to be tested for its intrinsic worth by the inevitable money-changer. Once adopted into the Muhammadan system, this weight held its own in defiance of all surrounding modifications up to the time of the reconstruction of the coinage by Bahlól Lódi (A.D. 1451-1488), when we find it intact in the number of grains, but designated by the altered name of *tank*,² a weight frequently cited by Bábar himself and the subsequent writers of Akbar's period.

The palpable history of the 140-grain coin commences with the Greek adaptation of the Arachosian copper money noticed at p. 17. A prince of the name of Rámadata,³ whose period we do not know, but whose coins bear every mark of antiquity, has left us specimens ranging as high as 137·5 grains; and other half pieces of assimilated fabric, of what is termed the Behat⁴ group of coins, come fully up to the requisite 70 grains; while the minor subdivisions may be traced in coins which even now weigh 34·5 and 17·4 grains. We need not attempt to follow the onward course of this weight, in intermediate times, as it comes so prominently to the front when 'Alá-ud-dín Muhammad Sháh (A.D. 1295-1315), in his desire to diminish the cost of his army, undertook to cheapen supplies of all kinds,⁵ and simultaneously reduced the current silver *tankah* of 175 grains to the 140 grains of the old copper standard of the *kársha*. We have none of 'Alá-ud-dín's coins of this pattern extant, but we meet with them in full and effective use under Muhammad bin Tughlak, in A.D. 1324,⁶ when their weights are more accurately defined than could have been looked for in the coarser copper pieces of contemporaneous mintages. Muhammad bin Tughlak, it may be mentioned, introduced on his accession a new gold piece; for whereas the gold coins had hitherto corresponded with the concurrent silver pieces in name and weight of 175 grains, the new gold "*dínár*" was raised to 200 grains. These official changes afforded me fresh means of testing the accuracy of the assumed weight of the 80 *rati* or 140-grain coin, and the proportions required to meet the altered values, in each case, were found to tally exactly with that latter definition. Indeed, had further evidence been necessary, appeals might have been made to the standard weights of Bahlól Lódi,⁷ or to the succeeding copper coinage of the early Mughals, the equitable measure of which was left to the responsibility of the various local mints,⁸ whose administrators simply followed old traditions in the case of the baser metal, to

¹ Journ. R. A. S. 1848, ix. p. 177; Pathán Kings of Dehli, p. 58; Ariana Antiqua, 428; Prinsep's Essays, i. p. 313; Reinaud, Fragments Arabes, Journal Asiatique, Aout, 1844, Mars, 1845.

² Pathán Kings, p. 363. "Whatever doubt might once have existed as to the measure of this weight, it is now satisfactorily set at rest by the coins themselves: the *tank*, in short, is merely the old *dharana* of 32 *ratis* (or 56 gr.)."

³ Prinsep's Essays, i. p. 217, xx. figs. 47, 48.

⁴ "So styled from the cognate specimens found in the Hercu-

laneum of that name north of Saharunpore in the Doáb of the Ganges and Jumna."—Prinsep's Essays, i. p. 200, pl. xix.

⁵ Pathán Kings, p. 158. My authority for this statement is the prose work of the celebrated Dehli poet, Amír Khusrú, entitled *Tárikh 'Alái*, or *Khazáin al Futúh*. It is as yet unpublished. Elliot's Historians, iii. p. 67; Journ. R. A. S. iii. n.s. p. 115.

⁶ *Ibid.* p. 213.

⁷ *Ibid.* p. 362.

⁸ Anonymous Coins, *ibid.* p. 385.

which, indeed, adhering to the custom of other lands, the alien Sovereigns did not care to lend their names or titles.

With this double scale of proportions any elaborate analysis or recapitulation of the data of the third ratio afforded by the 100 *rati*, or 175-grain coin, would be superfluous. Suffice it to say that, following out the early post-Vedic definition of the "*Ṣataraktika*," we find this weight still ruling as the official standard for the gold and silver currencies under the Pathán Kings of Dehli from A.D. 1228¹ up to the accession of Muhammad bin Tughlak in A.D. 1324, when, although its supremacy was shaken for the time by the currency re-adjustments of that Prince of Moneyers, it was soon revived as the ordinary² mint *unit*, and came down to our time in the Benáres and other local issues,³ in spite of the authoritative changes and attendant complications introduced by Shír Sháh and Akbar.

The combined scale of proportions, thus established, stands as follows :—

Purāṇa	56 ÷ 32 <i>ratis</i> = 1·75 grains.
Kārsha	140 ÷ 80 „ = 1·75 „
Ṣataraktika, or Tankah . .	175 ÷ 100 „ = 1·75 „

This, then, is the weight I finally propose to assign to the original *rati*. There may be some doubt about the second decimal, as we are not bound to demand an exact sum of *even* grains, or parts of a grain; but the 1·7 and something like 5, may be accepted with full confidence, leaving the hundredth open to possible controversy, though from preference, as well as for simplicity of conversion of figures, I adhere to the $1\frac{3}{4}$. Under this system the definition of each ancient Indian weight by modern Troy grains will range as follows :—

SILVER	{ 1 <i>māsha</i>	=	2 <i>ratis</i> or	3·5 grains.
	{ 1 <i>dharaṇa</i> , or <i>purāṇa</i>	=	32 „ „	56·0 „
	{ 1 <i>ṣatamāna</i>	=	320 „ „	560· „
GOLD	{ 1 <i>māsha</i>	=	5 „ „	8·75 „
	{ 1 <i>suvarṇa</i>	=	80 „ „	140· „
	{ 1 <i>pala</i> , or <i>nishka</i>	=	320 „ „	560· „
COPPER	{ 1 <i>dharaṇa</i>	=	3200 „ „	5600· „
	1 <i>kārsha</i>	=	80 „ „	140· „
Subdivisions of <i>kārsha</i>	{ $\frac{1}{2}$	=	40 „ „	70· „
	{ $\frac{1}{4}$	=	20 „ „	35· „
	{ $\frac{1}{8}$	=	10 „ „	17·5 „

¹ Pathán Kings, p. 46.

² *Ibid.* p. 208. Gold, No. 172, A.H. 727; and Nos. 175, 175a, p. 215, Silver Coin, No. 188, A.H. 734.

³ Prinsep's Essays, ii. Useful Tables, 20: "We find coins of Akbar's reign dug up in various places, and some weighing from 170 to 175 grains. Cabinet specimens of the coinages of Jahángír, Sháh Jáhán, and Aurangzéb have also an average weight of 175 grains pure, and the same prevails, with little

variation, up to the time of Muhammad Sháh, in the coins of opposite extremities of the empire; or struck in the Súbahs of Surát, Ahmadábád, Dehli, and Bengal."—p. 22: "Assay of Dehli Sonát=175·0 grains *pure*; Akbari of Láhór, 175·0; Sháh Jaháni of Agra, 175·0, of Surát, 175·0."—p. 53: "Benáres old weight 175·0, pure silver 169·17; Benáres old standard 175·0, pure silver 168·875."

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